CITY OF COLLEGE PARK MARYLAND

COMPLETE STREETS
POLICY AND IMPLEMENTATION PLAN

FINAL REPORT
MARCH 2016

COLLEGE PARK MARYLAND
A Smart Place to Live

Metropolitan Washington Council of Governments

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

THE CITY OF COLLEGE PARK COMPLETE STREETS
POLICY AND IMPLEMENTATION PLAN

FINAL DRAFT REPORT | MARCH 2016

PREPARED FOR:

THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

AND

THE CITY OF COLLEGE PARK

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INTRODUCTION

01

PROJECT HISTORY

INTRODUCTION

Over the past several years, the City of College Park has made strides to become a vibrant, multimodal, sustainable, and healthy city. As a suburb of Washington, D.C. and home to the main campus of the University of Maryland (UMD), College Park attracts large numbers of daily commuters, students and employees to and through its neighborhoods and thoroughfares. Historically, a majority of students commuted to the UMD campus. However, this commuting trend has been changing over the last ten years as new student and private residential projects have been built. These projects are within walking and biking distance to campus. UMD has recognized this trend and have taken measures in their master plan to reduce parking areas for cars and encourage other modes of travel like walking and biking. The existing street network which once had a singular goal of moving only automobile traffic, must also change to meet the new demands of a more multi-modal population of College Park.

Today, with the expansion of the University, new mixed use development near campus and along US 1, and the arrival of the Purple Line, College Park is working to shape itself into a more walkable urban place. Recognizing the importance of the connections between transportation, land use, public health, social equity, and economic development, the City has adopted a Strategic Plan and a Healthy Eating and Active Living Community Resolution. In addition, the City has studied its major corridors, resulting in sets of goals and objectives to become more interconnected place where residential, educational, commercial, and entertainment areas are highly accessible by active transportation modes. This work has laid the foundation for a city-wide network of complete streets and green infrastructure and will help to make College Park a truly multimodal, sustainable, and livable place.

While the City has worked closely with Prince George's County, the University, and the State to incorporate complete streets and green infrastructure, the plans and strategies developed have not yet been joined together to create an integrated and phased program of investment and action. This policy and implementation plan will help bridge the gaps between this previous work and the next steps toward the City's goals.

FIGURE 1 | COMPLETE STREET EXAMPLE

Neighborhood Street - Sacramento, CA | Source: KAI

FIGURE 2 | COMPLETE STREET EXAMPLE

Park Avenue - Winter Park, FL | Source: KAI

PROJECT HISTORY

As stated in the introduction, the policy and implementation plan is a direct outgrowth of previous planning efforts on both the State and local level, to increase the livability of College Park as a community, and the attractiveness of non-auto transportation modes, in order to meet the City's mobility needs.

Complete streets projects and policies are at their best when they recognize and strengthen the connection between transportation infrastructure and the land use context in which it is situated. As such, development of a complete streets policy and implementation framework is a natural project for the Transportation/Land-Use Connections Program technical assistance grants administered by the Metropolitan Washington Council of Governments. (MWCOG)

This policy and implementation plan will synthesize existing work, analyze existing conditions, provide sample policy language, outline guiding principles and provide tools for conceiving and prioritizing complete streets projects.

FIGURE 3 | MWCOG/TLC PROJECT EXAMPLE

Complete Streets - Rockville, Maryland | Source: MWCOG

FIGURE 4 | MWCOG/TLC PROJECT EXAMPLE

Takoma Langley Crossroads | Source: MWCOG

TLC TRANSPORTATION/LAND-USE CONNECTIONS PROGRAM

PREVIOUS STUDIES

FIGURE 5 | PREVIOUS STUDIES REVIEWED

STUDY	AGENCY	DATE
1. WMATA Station Access + Capacity Study Final	WMATA	Apr-08
2. Transportation Study of the US 1 College Park Corridor	CITY	Jul-08
3. University of Maryland Bicycle Master Plan	UMD	Apr-09
4. County-wide Bikeways + Trails Master Plan	M-NCPPC/PGC	Nov-09
5. Metrorail Bicycle + Pedestrian Access Improvements	WMATA	Oct-10
6. Purple Line - Corridor Access Study (CAST) Recommendations	WMATA	Jun-11
7. University of Maryland Master Plan | Bicycle Summary Report	UMD	Nov-11
8. City of College Park Pavement Management Plan (FY 2015)	CITY	Mar-14
9. US 1 from College Avenue to MD 193 Value Engineering Study	SHA	Jul-14
10. US 1 - College Park Corridor Improvement Projects (Segment 1)	SHA	Oct-14
11. Hollywood Commercial Streetscape: Concept Recommendations	CITY	Feb-15

2012

2013

2014

2015

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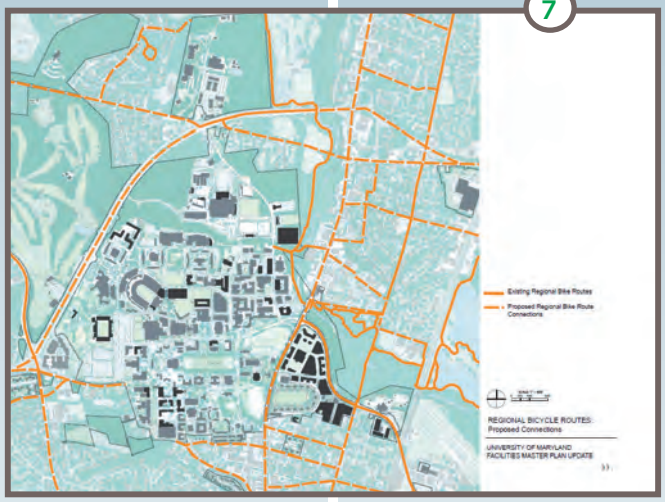

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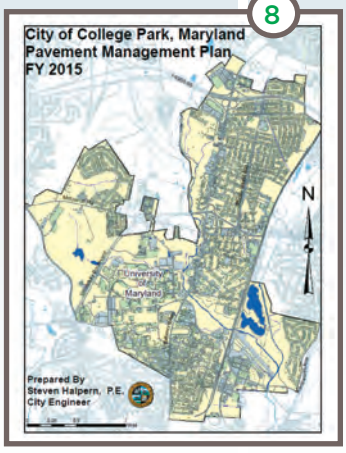

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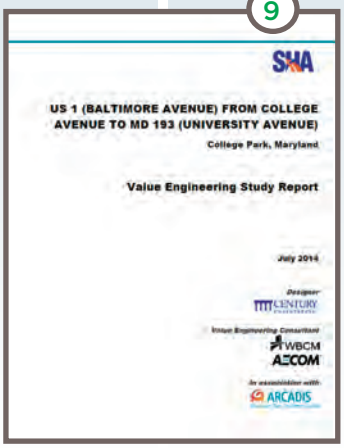

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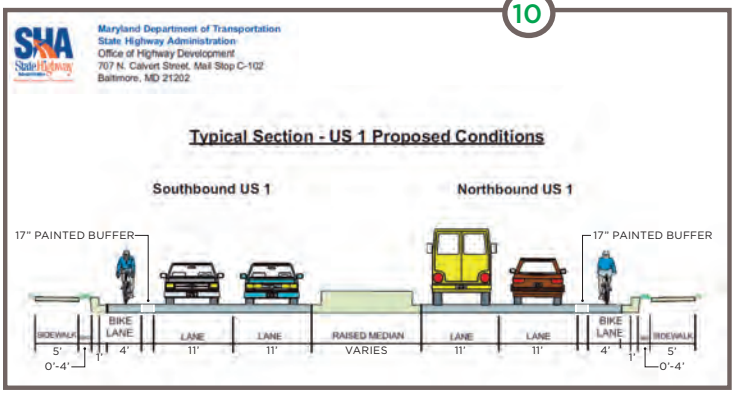

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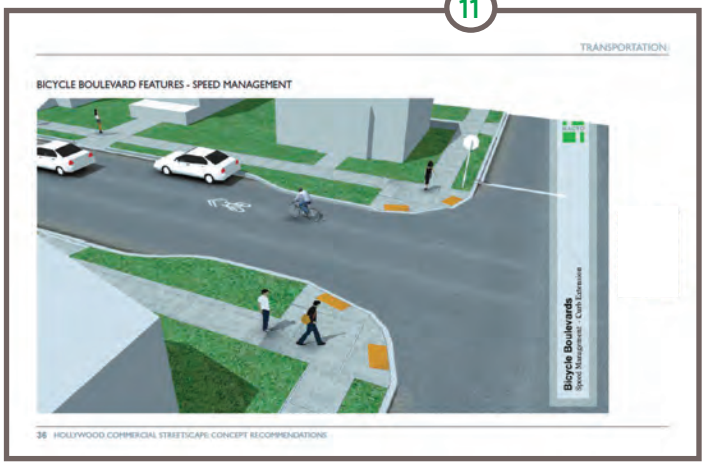


PREVIOUS STUDIES

TRANSPORTATION STUDY OF THE US 1 COLLEGE PARK CORRIDOR

US 1 College Park Corridor Study Goals and Objectives

- *Create a place;*
- *Make city and county development process more predictable;*
- *Ensure that transit supports additional development and is easy to use;*
- *Provide safe, accessible, and convenient pedestrian infrastructure, and;*
- *Accommodate bicyclists throughout the corridor.*
- *Recommended a series of short, medium, and long term strategies from policy to implementation.*

The goals and objectives in this study, specifically creating great places, calling for safe, accessible, and convenient pedestrian infrastructure, and accommodating bicyclists throughout the US 1 Corridor, should be incorporated into the goals and objectives of College Park's complete streets policy. Additionally, the study suggests alternative examples for parking lot layout and access management (Figure 6) and shows some of those examples in plan view (Figure 7). These considerations should also be taken into account for the City's complete streets policy.

FIGURE 6 | EXAMPLE DIAGRAMS FOR LAYOUT AND ACCESS MANAGEMENT ON US 1

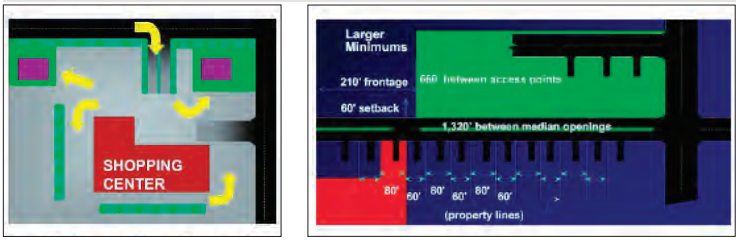
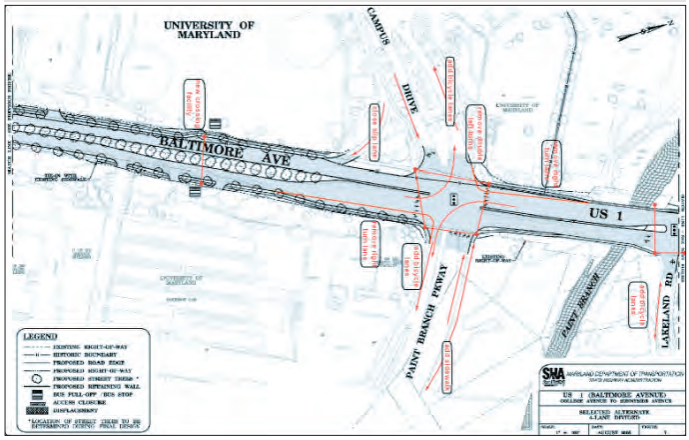


FIGURE 7 | US 1 & PAINT BRANCH PKWY ALTERNATIVE EXAMPLE



METRORAIL PURPLE LINE CORRIDOR ACCESS STUDY (CAST)

METRO Purple Line Alignment Details:

- *Station location at College Park Transit Center*
- *Suggestions for pedestrian improvements within 10-minute walking radius including:*
  - *Intersection improvements like ADA crosswalk upgrades and signal timing*
  - *Traffic calming elements like curb extensions at intersections.*

The details in the MetroRail Purple Line CAST locate four rail stations in College Park and one adjacent to the City. Three of the stations are located within the campus boundaries of University of Maryland, one station is located at the College Park Transit center adjacent to 50th Avenue/ River Road, and the last adjacent station is on River Road closer to Kenilworth Avenue. These stations will make a significant impact within the City and aligning the complete street policy with this future infrastructure enhancement and the potential transit oriented development that will occur nearby will be advantageous.

Additionally, the CAST also calls for pedestrian improvements within a one-half mile of each proposed station. The City should consider partnering with WMATA and MTA to coordinate the efforts, budgeting, and prioritization of pedestrian improvements on the surrounding City streets so that they are in line with the complete streets policy.

FIGURE 8 | STATION AREA PLAN FOR THE COLLEGE PARK TRANSIT CENTER

US 1 COLLEGE PARK CORRIDOR IMPROVEMENT PROJECT

Segment 1

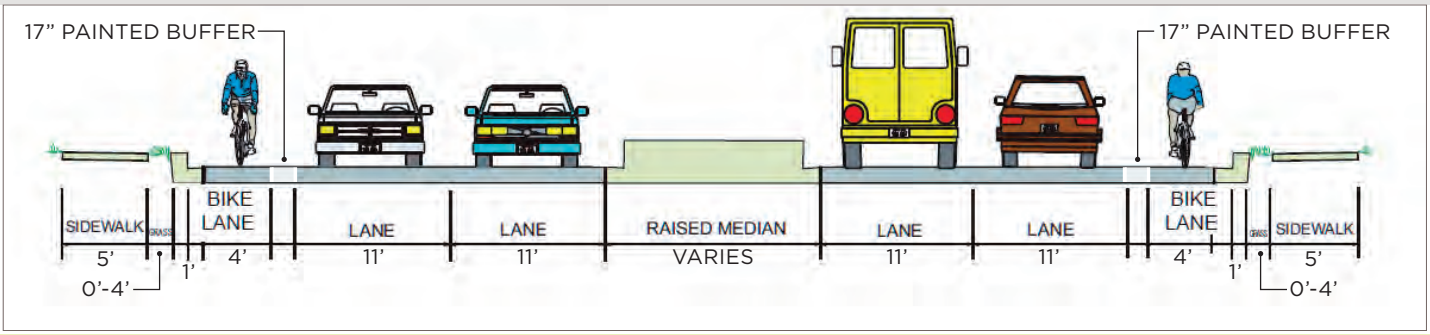
Maryland State Highway Administration (SHA) has been studying and now designing a street project for US 1/ Baltimore Avenue from University Avenue (MD 193) to College Avenue, known as Segment 1. The project has two other segments that are not yet funded including Segment 2, from Hollywood Boulevard to MD 193, and Segment 3, from Interstate 495 to Hollywood Road (Figure 9).

The proposed typical section (Figure 10) shows bike lanes at 4' with a 1' space in the gutter pan. This dimension is not consistent with the minimum shoulder widths established in SHA's *2015 Bicycle Policy and Design Guidelines* which reports a 4' minimum (NOT including the gutter pan) for streets with speeds at or over 35 MPH, and a 5' minimum (NOT including the gutter pan) for streets with speeds between 35-45 MPH and truck volumes at or higher than 8% ADT. Additionally, the sidewalk widths do meet minimum ADA standards at 5' wide, however, the undefined distance between the sidewalk and the back of curb will be problematic for ADA compliant crosswalks along the corridor.

Because Segment 1, currently in design, does not have funding for utility relocation or for construction, the City should work with SHA to ensure the eventual constructed segment meets the requirements of the proposed complete streets policy.

FIGURE 9 | US 1 CORRIDOR IMPROVEMENTS MAP

FIGURE 10 | SHA US 1 - BALTIMORE AVENUE PROPOSED SECTION



WMATA METRORAIL BICYCLE AND PEDESTRIAN ACCESS IMPROVEMENTS

Improvement Recommendations

In 2010, the Washington Metropolitan Area Transit Authority (WMATA) conducted a study to improve bicycle and pedestrian access to transit station facilities. This study not only considered the station itself, but also the surrounding area (Figure 11) Examples of recommendations from this study include:

- *Adopting a multimodal policy for station planning and design;*
- *Increasing in bicycle facilities and bicycle parking areas (examples shown in Figure 12)*
- *Encouraging transit-oriented development (TOD) adjacent to stations;*
- *Establishing clear and directed vehicular and pedestrian wayfinding;*

These recommendations are consistent with best practices in complete street policy and the City has an opportunity to help budget, prioritize, and implement these ideas working with WMATA to bridge the gap between the transit facility and the surrounding streets and blocks within the City's jurisdiction.

FIGURE 11 | STATION AREA MAP OPPORTUNITIES AND CONSTRAINTS

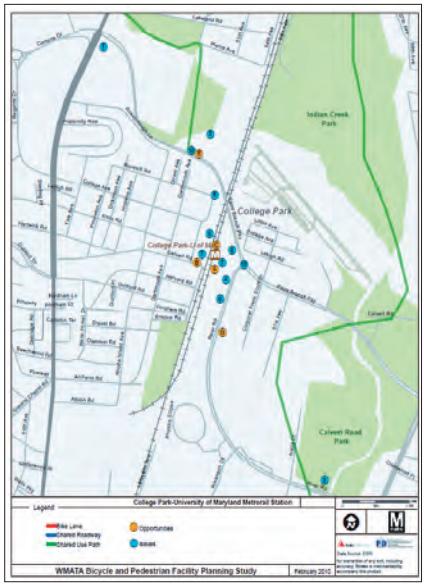
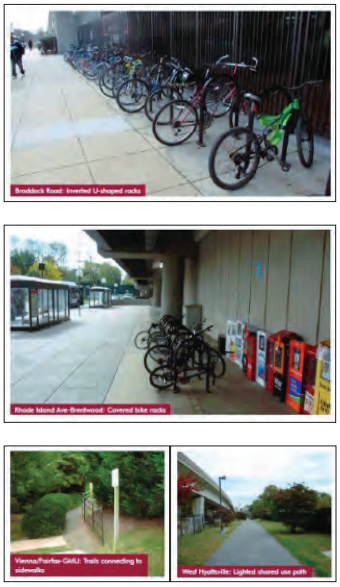


FIGURE 12 | BICYCLE FACILITIES EXAMPLES



WHY COMPLETE STREETS?

WHY ARE COMPLETE STREETS IMPORTANT?

The term 'Complete Street' was coined in 2003 by the America Bikes Coalition as it developed a transportation policy initiative to address all modes of travel along and across roadways:

> *"A Complete Streets Policy ensures that the entire right-of-way is routinely designed and operated to enable safe access for all users. Pedestrian, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across the Complete Street."*

Complete Streets play an important role in supporting vibrant, sustainable communities. Cities that support alternative modes of travel through investments in their public spaces have found these investments pay back over time in the form of increased property values, increased office, retail and commercial growth, healthier residents, and more vibrant neighborhoods with strong community character and unique sense of place. The design implications of Complete Streets can be seen in Figure 13. The right-of-way is examined in two different parts:

- The **Travel Zone** which includes:
  - Bicycles facilities (bike lanes, cycletracks, etc.)
  - Automobile facilities (travel lanes, on-street pkg, etc.)
  - Transit facilities (bus lanes, stops, etc.)
  - Pedestrian facilities (refuge islands, medians, etc.)
  - Traffic calming elements (mini-circles, curb extensions, etc.)

- The **Pedestrian Zone** which includes:
  - Sidewalks (varying widths depending on pedestrian activity)
  - Landscape (street trees, plants, pots, etc.)
  - Street Furniture (benches, trash cans, etc.)
  - Lighting (decorative poles, banners, planters, etc.)
  - Green Infrastructure (bioswales, rain gardens, etc.)

FIGURE 13 | TYPICAL COMPLETE STREETS COMPONENTS DIAGRAM

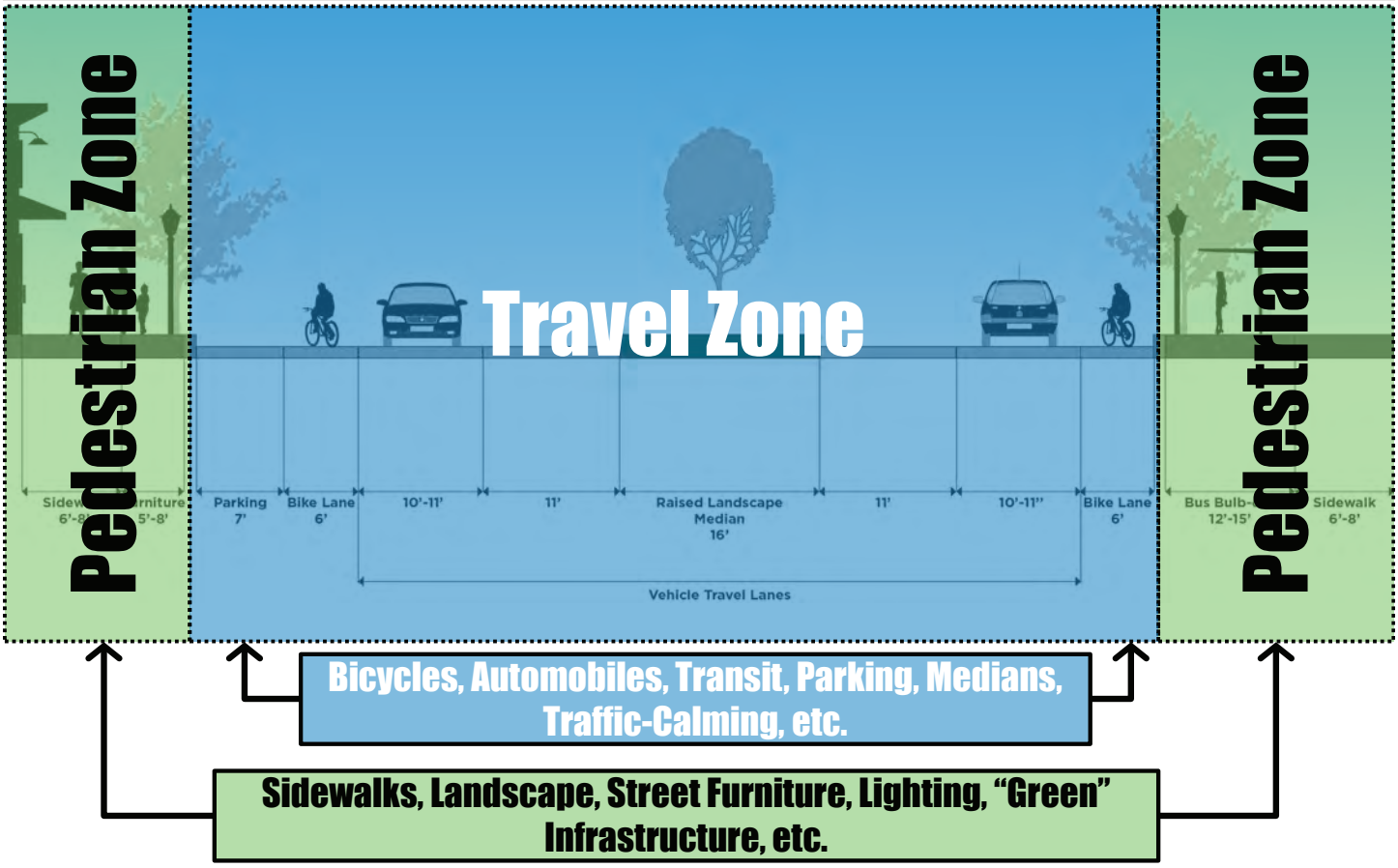


FIGURE 14 | "TACTICAL" SIGN ON A STREET IN COLLEGE PARK

College Park, MD | Source: City of College Park

Ensuring safe and comfortable access to destinations for users of all travel modes is crucial to making a community equitable for all residents and visitors and a more desirable place to live and to do business. A complete street network that accommodates all modes and enables healthful physical activity, has demonstrated economic development benefits, and helps to create successful vibrant places. In College Park, there already is support (Figure 14) for moving towards more complete streets.

The Complete Streets movement builds upon a livable, balanced approach to streets and traffic, which emphasizes the role of the street in defining urban form. Livable roadway design balances the need to move traffic with supporting adjacent land uses and neighborhoods. The roadway serves as an organizing feature for development. Complete Streets recognizes that roadway design is context specific, but there are significant design elements that impact walking, biking, and transit use. These include:

1. DESIGN SPEED

Vehicular travel speed has a measured impact on both comfort and safety for pedestrians and bicyclists. Increasing vehicular speeds increases the difficulty for pedestrians to cross roadways, as greater gaps are required between vehicles as shown in Figure 15.

FIGURE 15 | VEHICULAR GAP REQUIRED FOR PEDESTRIANS TO COMFORTABLY CROSS ROADWAY**1**

Miles Per Hour	Vehicular Stopping Sight Distance (feet)	Vehicular Distance Required for Pedestrians to Cross Roadway if Vehicle Does Not Slow Down (feet)
25	155	115
35	250	160
45	360	207

***Note:** This assumes one 11-foot travel lanes and average walk speed of 3.5 feet per second.*

Faster speeds increase the force with which a vehicle strikes a pedestrian, leading to more severe injuries and less likelihood of survival, as shown in Figure 16.

FIGURE 16 | PROBABILITY OF PEDESTRIAN FATALITY2

Miles Per Hour	Probability of Fatality
20	5%
30	37%-45%
40	85%

A cross sampling of design guidelines from other municipalities around the country stipulate that the design speed of the roadway should equal the posted speed. Geometric design elements, such as horizontal and vertical curves, block length, and vehicular lane widths should reinforce that posted speed. Additionally, these design guidelines for Complete Streets also recommend that roadway posted speeds should be set between 20 MPH to 35 MPH.

SOURCES
1. McLean A.J., et al. (1994). *"Vehicles Speeds and Incidence of Fatal Pedestrian Collisions."* Volume 1. Report No. CR 146. The Federal Office of Road Safety. Canberra, Australia.
2. United Kingdom Department of Transportation. (1987). *"Killing Speeds and Saving Lives."* London, England.

WHY COMPLETE STREETS?

2. ROADWAY WIDTH

Wider streets experience higher average and 85th percentile speeds than narrow streets. As street widths widen, accidents per mile increase. Wider streets act as barriers to pedestrian travel, making it difficult to cross the roadway (Figure 17). The number of travel lanes and the width of the travel lanes both impact the roadway width, and are therefore important complete street design elements.

3. DRIVER'S CONE OF VISION

The driver's cone of vision is the combined area the driver's fixation point and the ability to see beyond the peripheral vision at a given speed. This is an important aspect of the ability for a driver to stop or slow down when something or someone is in the roadway. As seen in Figure 18, at 30 MPH, the driver's fixation point is roughly 770 feet in the distance, the peripheral cone is very narrow making it hard for the driver to see objects in the peripheral zone. As the speed decreases, the fixation point for the driver becomes closer, and the driver can see more within the peripheral view, including the pedestrians on the street corner in Figure 18's 15 MPH.

It is important to note that the posted speed limit is different than the actual speed limit. The posted speed limit is the legal speed limit of the roadway, however, the street can be designed in a way to enforce or even lower this speed through elements such as bulb-outs and landscaping.

4. CURB EXTENSIONS (BULB-OUTS) AND RAISED LANDSCAPED MEDIANS

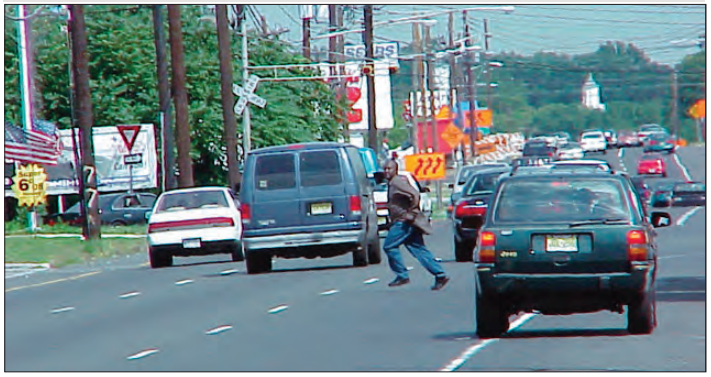
Complete Streets design focuses on roadway permeability, the ability for a pedestrian to move across a roadway. Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, reducing the time that pedestrians are in the street, and allowing space for the installation of a curb ramp.

Bulb-outs and refuge islands assist pedestrian in crossing a roadway by making the pedestrian more visible and reducing the amount of pavement the pedestrian needs to cross. Raised medians provide a refuge for pedestrians crossing the roadway, allowing pedestrians to negotiate one direction of travel at a time.

6. LANDSCAPING/STREET FURNITURE

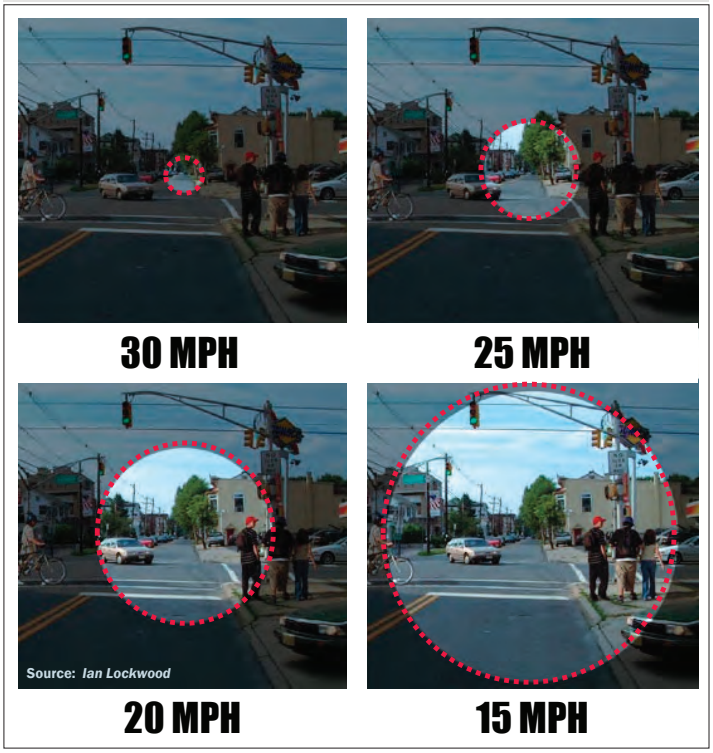
The careful use of landscaping along a street can provide separation between motorists and pedestrians, reduce the visual width of the roadway (which can help to reduce vehicle speeds), and provide a more pleasant street environment for all. This can include a variety of trees, bushes, and/or flowerpots, which can be planted in the buffer area between the sidewalk or walkway and the street.[1] Landscaping can also reduce the ambient temperature and provide refuge from the sun.

FIGURE 17 | PEDESTRIAN CROSSING THE STREET



Unknown Street | Source: KAI

FIGURE 18 | THE DRIVER'S CONE OF VISION



Source: Ian Lockwood

FIGURE 19 | CURB EXTENSIONS/BULB-OUTS

Source: KAI

SOURCES

1. Pedestrian and Bicycle Information Center (PBIC). (2015). *"Landscaping."* Retrieved March 31, 2015 from the PBIC Online Library: http://www.pedbikeinfo.org/planning/facilities_streetscape_landscaping.cfm.

7. PEDESTRIAN AND BICYCLE AMENITIES

Bicycle lanes are designated by a white stripe, a bicycle symbol, and signage that alerts all road users that a portion of the roadway is for exclusive use by bicyclists (Figure 20). They help to narrow the roadway while providing adequate bicycle facilities in a network fashion. Similarly, sidewalks provide places for pedestrians of all ages to walk, run, and play. Sidewalks are associated with significant reductions in pedestrian collisions with motor vehicles. Such facilities also improve mobility for pedestrians and provide access for all types of pedestrian travel: to and from home, work, parks, schools, shopping areas, and transit stops.[1]

The lack of sidewalks and bicycle facilities suppresses travel by these modes and endangers those who do chose to travel on foot or by bicycle. Sidewalks should be present along all collector and arterial roadways in urban areas. A separate bicycle lane is recommended for roadways with volumes over 3,000 vehicles per day (VPD)[2].

8. PARKING

On-Street parking serves as a buffer for pedestrians and supports local commercial uses along the roadway. Parallel parking is the most common on-street parking used, but it can also include front-in angled parking (at roughly 45 or 60 degrees) or back-in angled parking (safer than front-in angled parking and often easier to execute than parallel parking).

9. BLOCK LENGTH AND NETWORK

Typically in developed areas, there are two types of development patterns: suburban and urban patterns. (Figure 21) Suburban patterns tend to have longer blocks and single point access to the collector road and limited access to adjacent land uses. Urban patterns tend to have shorter blocks resulting in more intersections to process the various traffic patterns and more access to adjacent land uses. (Figure 22) The single point loading from the suburban pattern on the collector road creates multiple loading points which in turn creates congestion. (Figure 23)

Reducing the unimpeded block length, or distance drivers may travel without being required to slow or stop, reduces travel speeds and provides more places for pedestrians to cross the street. While the actual design and allocation of the right-of-way of individual streets is important for all of the reasons described in previous sections, complete streets should be thought of as part of a network, not as isolated facilities. A connected street network provides access to destinations more efficiently and with fewer detours, which is important for users of more detour-sensitive modes such as walking an bicycling.

Additionally, a connected street network disperses motor vehicle trips among several parallel routes, instead of concentrating them on one or two roadways. Those resultant high volume roadways are significant barriers to bicycle and pedestrian connectivity, and can be challenging to cross, and difficult to retrofit.

The other implication of a lack of parallel routes is that all of the motor vehicles from a relatively disconnected local network must eventually enter the arterial and collector network that can take them out of their neighborhood. This happens at just a few intersections, causing congestion.

FIGURE 20 | BICYCLE AMENITIES

Museum Road, Gainesville, FL, Source: KAI

FIGURE 21 | STREET NETWORK DIAGRAM

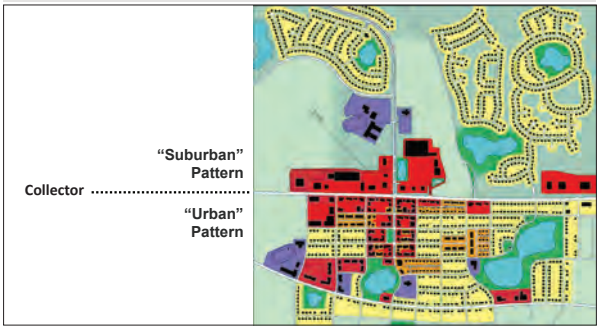


FIGURE 22 | TRAFFIC PATTERNS

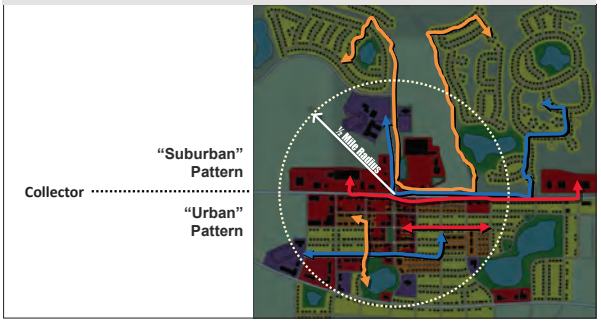
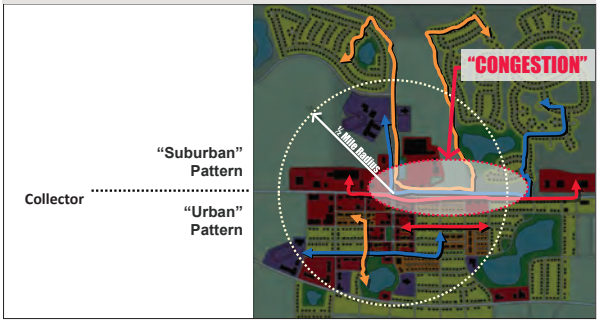


FIGURE 23 | CONGESTION



Source: KAI

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1. Pedestrian and Bicycle Information Center (PBIC). (2015). *"Bicycle and Pedestrian Amenities"* Retrieved March 31, 2015 from the PBIC Online Library: http://www.pedbikeinfo.org/planning/facilities_ped_sidewalks.cfm.
2. Federal Highway Administration, 2003. *"A Review of Pedestrian Safety Research in the United States and Abroad."* Publication Number: FHWA-RD-03-042. Washington, D.C.

EXISTING CONDITIONS ANALYSIS

02

TRANSPORTATION CONTEXT

ROAD HIERARCHIES

The Maryland State Highway Administration (SHA) designates[1] the roads that travel through the City of College Park (City) into four categories (Figure 24):

- **Interstates (Freeways)**

  Interstates provide the key means of interstate, intrastate, and interregional travel. The freeways are under the full jurisdiction of SHA. On these highways, the mobility of through traffic is of paramount importance. As such, they must be able to support high volumes of traffic at high speeds over long distances. Maximum control of access is necessary to implement and preserve this function. Direct access is not allowed on freeways. Instead, traffic may enter or exit the highway only at grade-separated interchanges. Interstate 495 (The Capitol Beltway) is the only interstate in College Park.

- **Principal/Major Arterial Roads**

  Connecting to freeways at strategic locations, these routes are vital to the efficient and economical movement of commuter traffic, goods, and services each day at all levels of the highway network. The jurisdiction of these roads vary between SHA, Prince George's County (PGC), and the University of Maryland (UMD). Their design reflects a wide range of functional requirements, including the ability to support relatively high operating speeds and traffic volumes. Arterial routes have varying degrees of access control, depending on their specific functional requirements. Access to adjacent properties is subordinate to the need to ensure mobility for through traffic on arterial routes. In College Park, these roads include:

  - ***Principal Arterial Roads:***
    - *US 1 (Baltimore Avenue), SHA;*
    - *MD 193 (University Boulevard/Greenbelt Road), PGC*
  - **Major Arterial Roads:**
    - *Paint Branch Parkway (PGC);*
    - *Adelphi Road (PGC)*

- **Major Collector Roads**

  Collector routes provide links between local streets, land uses, and regional transportation facilities. Some of these roads are under the jurisdiction of PGC and some are under the City. These routes comprise the most frequent patterns of "day to day" travel within and between communities in a region and provide connection to major highways. Operating speeds are usually moderate, varied with the extent of development and direct access. These roadways often carry a moderate amount of traffic during the day, with increased traffic during the morning and evening commute periods. Access to adjacent properties and mobility of through traffic are equally important considerations on collector routes. As such, the highway characteristics vary according to the zoned land uses and development context. In College Park, these roads include:

  - *Campus Drive (PGC, UMD);*
  - *Metzerott Road (PGC);*
  - *Preinkert Drive (UMD)~Hartwick Road~ Guilford Road~Calvert Drive (City)*
  - *Rhode Island Avenue (PGC);*
  - *River Road (PGC)*

- **Local Roads**

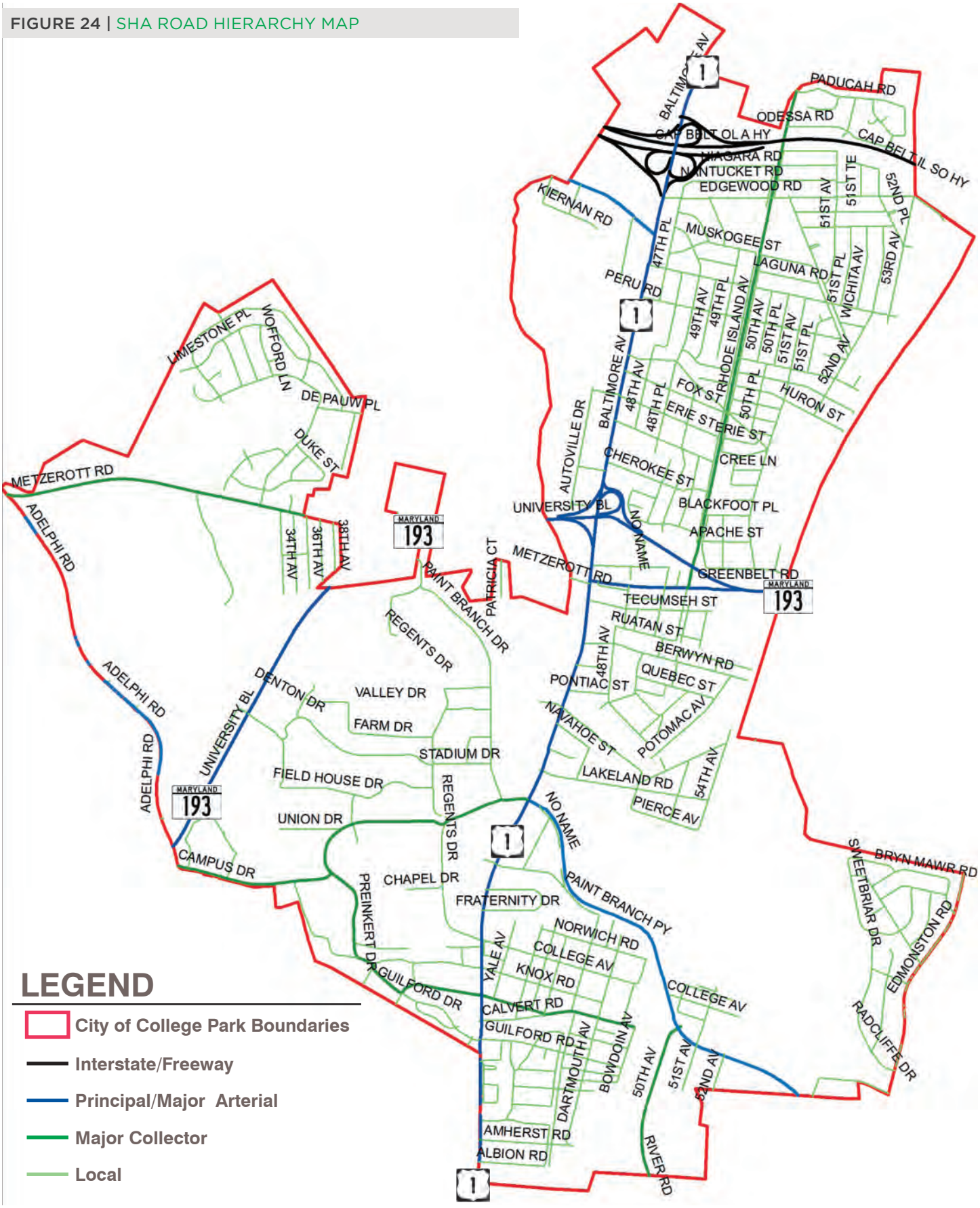
  Local roads and streets serve mainly to provide direct access to individual properties, for a diverse group of users. They are designed for local traffic, slow operating speeds, and numerous intersection approaches and driveways. The design of local roads and streets often emphasizes pedestrian mobility and access to businesses, community, and residential areas. Parking is often permitted on the street and refuse collection and emergency response are important design considerations. The remaining roads, not previously mentioned in another designation, are considered local roads.

Because the locals roads are under the direct jurisdiction of the City, they **provide the greatest flexibility** when it comes to implementing Complete Street principles and policies.

SOURCES

1. SHA Highway Access Manual. (2015). *"Definitions of Road Classifications."* Part One, Chapter 2. Retrieved from: http://www.marylandroads.com/index.aspx?PageId=401#2.3.1

FIGURE 24 | SHA ROAD HIERARCHY MAP



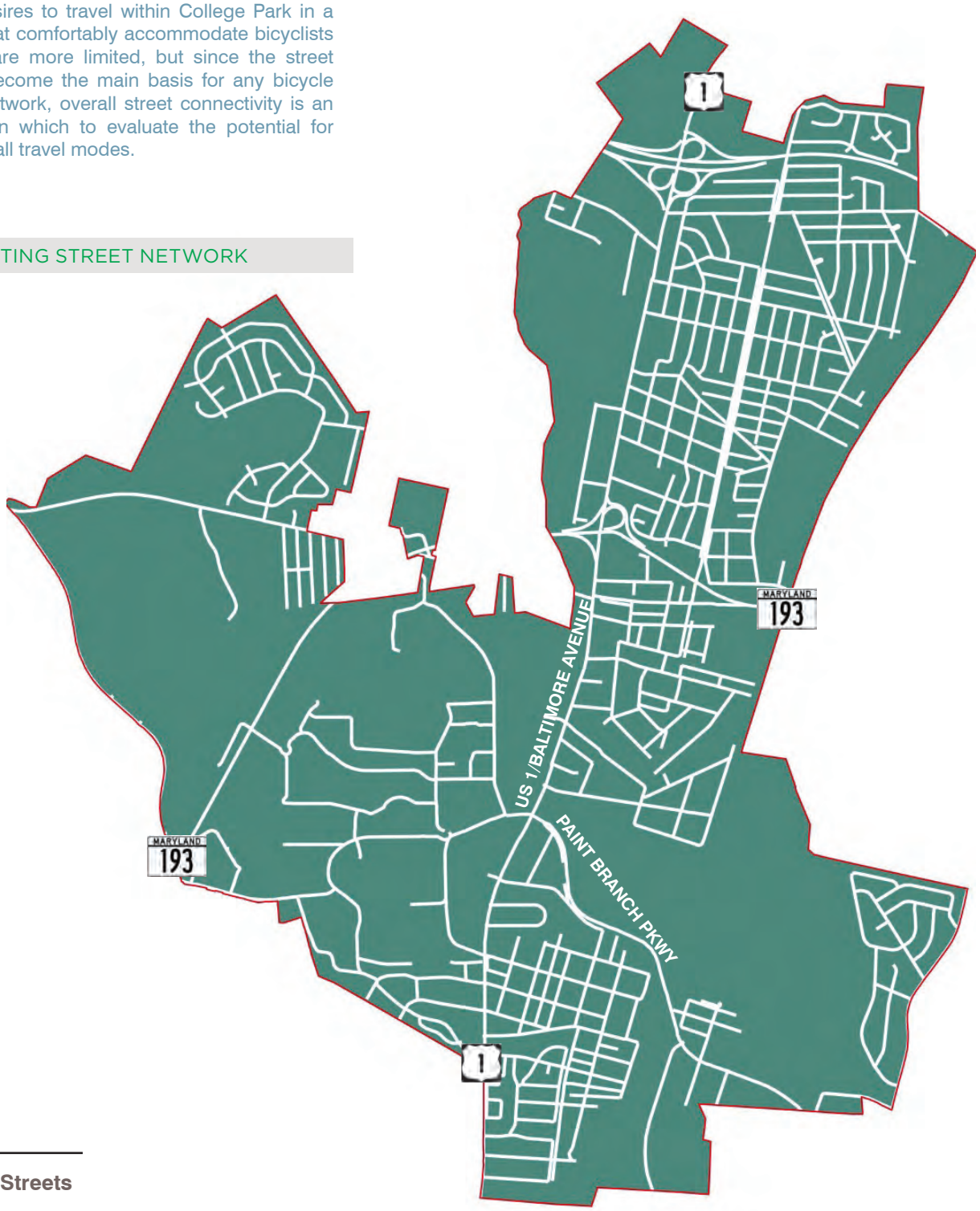
TRANSPORTATION CONTEXT

EXISTING STREET NETWORK

Figure 25 shows the entirety of the current street network in College Park. While there are some areas near the Metro Station, in park areas, and on the university campus that don't have many streets crossing them, the street network generally reaches all of the desired destinations in the City.

The implication of this is that it is feasible to go nearly anywhere one desires to travel within College Park in a car. The streets that comfortably accommodate bicyclists and pedestrians are more limited, but since the street network should become the main basis for any bicycle and pedestrian network, overall street connectivity is an important basis on which to evaluate the potential for improvements for all travel modes.

FIGURE 25 | EXISTING STREET NETWORK

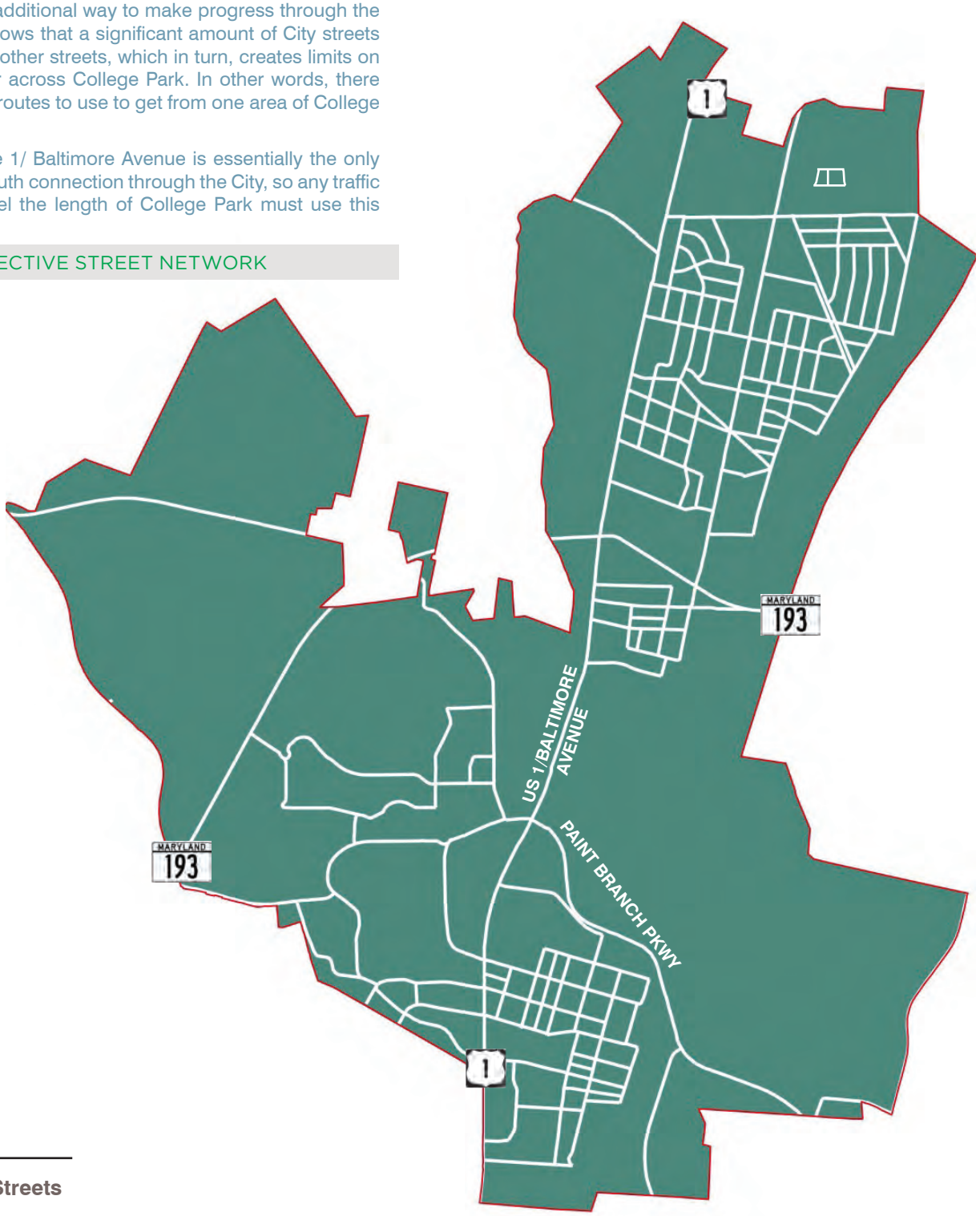


EFFECTIVE STREET NETWORK

Figure 26 shows the effective street network in College Park. This map was created by removing any streets that do not connect to other streets. Typically, these streets either loop back to the same feeder street or are dead end/ cul-de-sac streets. The removed streets also include roadway on/off ramps. These streets do not contribute to the network of street because there are no parallel or additional way to make progress through the area. Figure 26 shows that a significant amount of City streets do not connect to other streets, which in turn, creates limits on mobility around or across College Park. In other words, there are few "through" routes to use to get from one area of College Park to another.

Additionally, Route 1/ Baltimore Avenue is essentially the only complete north/south connection through the City, so any traffic attempting to travel the length of College Park must use this roadway. If Route 1 were used almost exclusively for through traffic, while local traffic preferred parallel routes, the current traffic problems would not be nearly as pronounced. However, as is shown in Figure 26, even many trips within College Park, particularly any that cross Paint Branch Parkway must make use of Route 1 for at least part of their length.

FIGURE 26 | EFFECTIVE STREET NETWORK



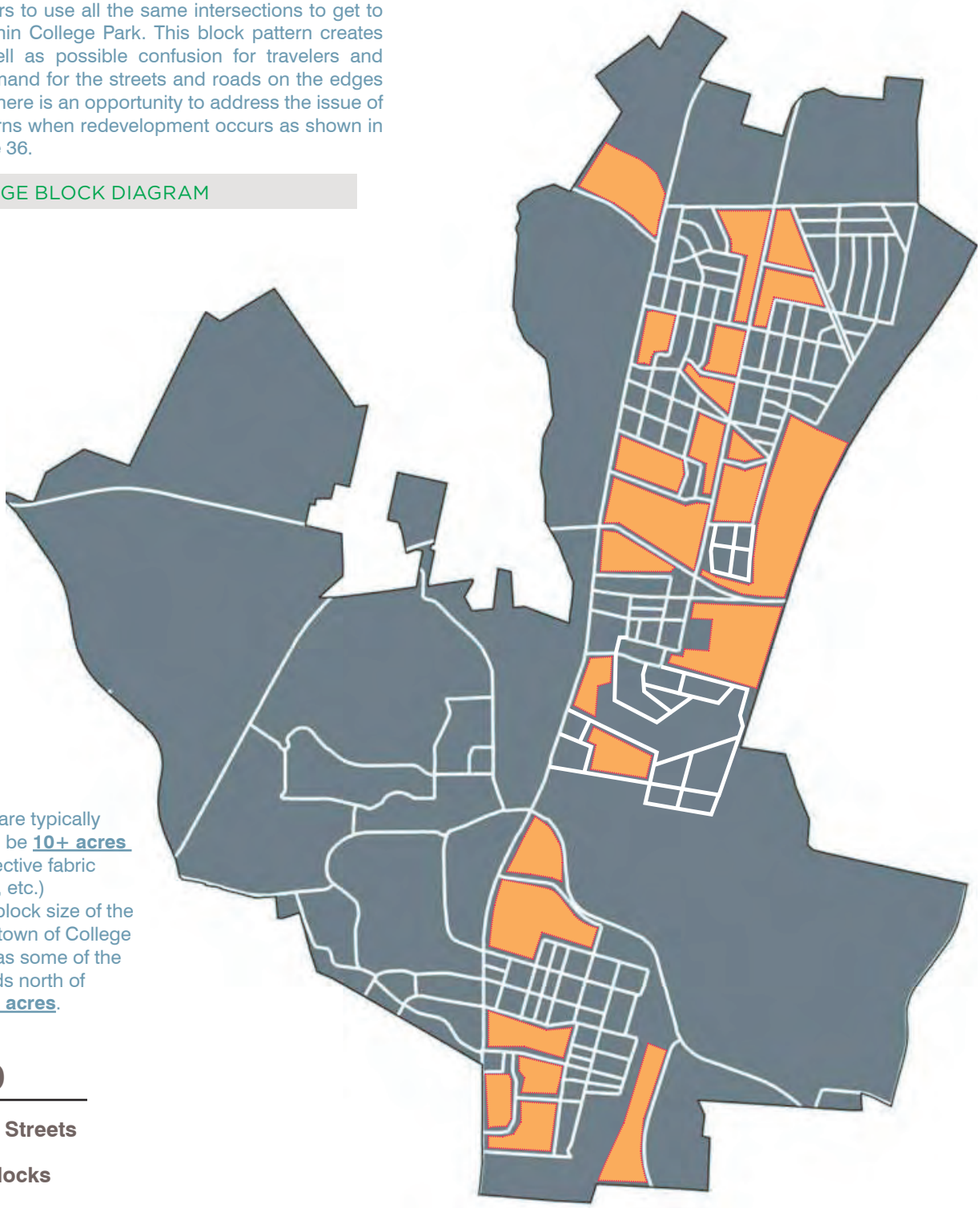
CONNECTIVITY CONTEXT

LARGE BLOCKS & CONNECTIVITY

Figure 27 highlights "blocks" of properties within College Park that, while they may have streets within them that provide access to the homes and businesses there, do not have streets that connect through them. Thus, anyone wishing to cross these blocks must use the streets along their edges.

Similar to the "suburban pattern" shown in Figure 21, the larger blocks force drivers to use all the same intersections to get to another place within College Park. This block pattern creates congestion as well as possible confusion for travelers and means higher demand for the streets and roads on the edges of these blocks. There is an opportunity to address the issue of larger block patterns when redevelopment occurs as shown in Figure 50 on page 36.

FIGURE 27 | LARGE BLOCK DIAGRAM



NOTE:

- Large blocks are typically considered to be **10+ acres** without connective fabric (streets, trails, etc.)
- The average block size of the historic downtown of College Park, as well as some of the neighborhoods north of MD 193 is **3.5 acres**.

LEGEND

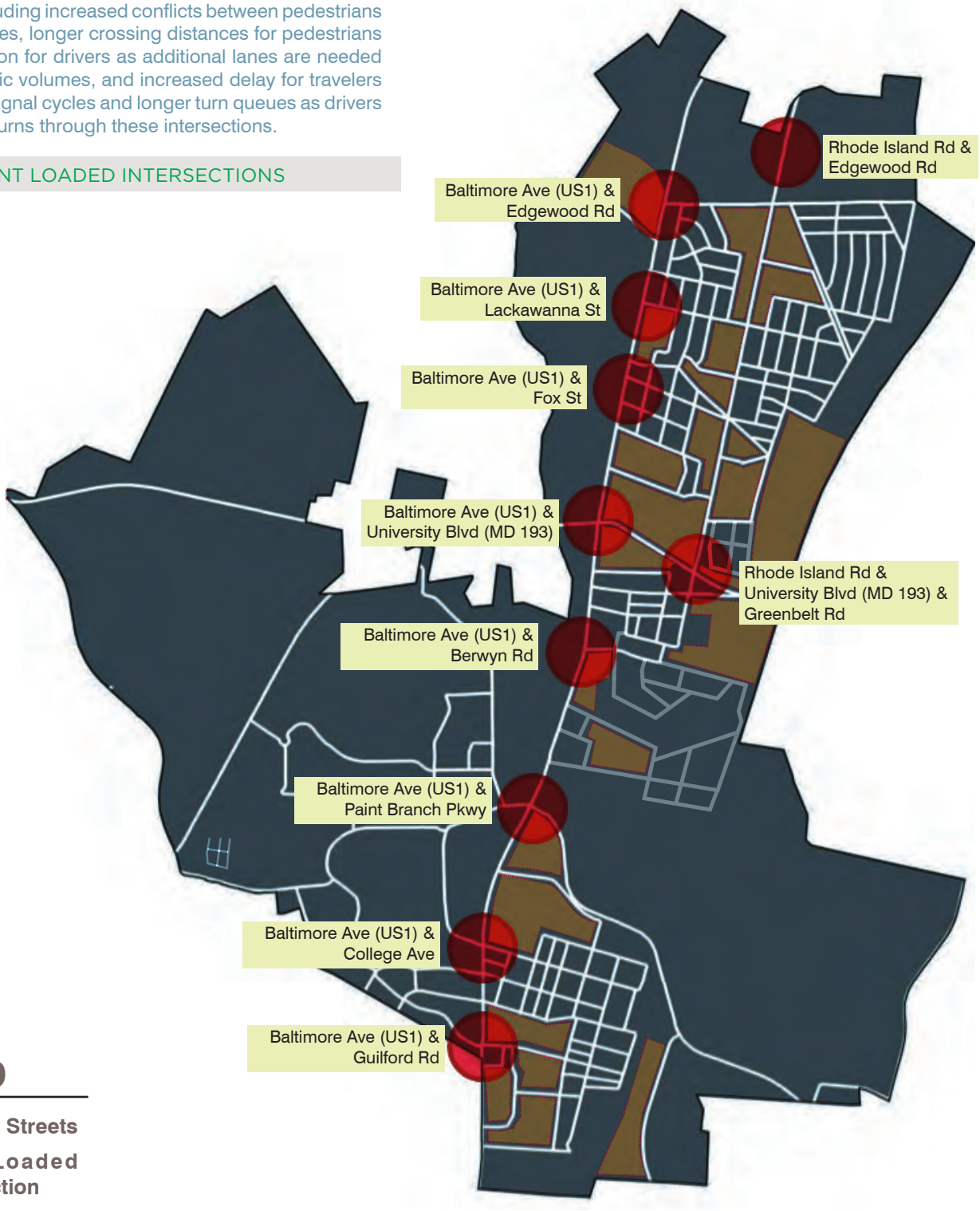
- Existing Streets
- Large Blocks

POINT-LOADING AT INTERSECTIONS

Figure 28 shows the intersections that are most affected by the absence of viable parallel routes within some of these large blocks. These are the intersections where the most vehicles have to cross or make turns that would be unnecessary within a more connected street grid.

There are cascading effects from these point loaded intersections, including increased conflicts between pedestrians and turning vehicles, longer crossing distances for pedestrians and more confusion for drivers as additional lanes are needed for the higher traffic volumes, and increased delay for travelers due to extended signal cycles and longer turn queues as drivers wait to make the turns through these intersections.

FIGURE 28 | POINT LOADED INTERSECTIONS



ENVIRONMENTAL CONTEXT

WATERSHED AS POTENTIAL BARRIER

Some of the limitations to street network connectivity in College Park are environmental. As shown in Figure 29, the Paint Branch Creek Watershed bisects the City to the north and south and creates barriers (Figure 30) to street connectivity. In nearly all cases, adding connectivity through the watershed will require bridging the street over the waterway. Because of the high cost associated with building vehicular bridges, it is not recommended to connect streets across the watershed. However, expanding the existing pedestrian trail system and adding streets that parallel the watershed should be considered (See Figure 50 on page 36).

FIGURE 29 | EXISTING WATERSHED

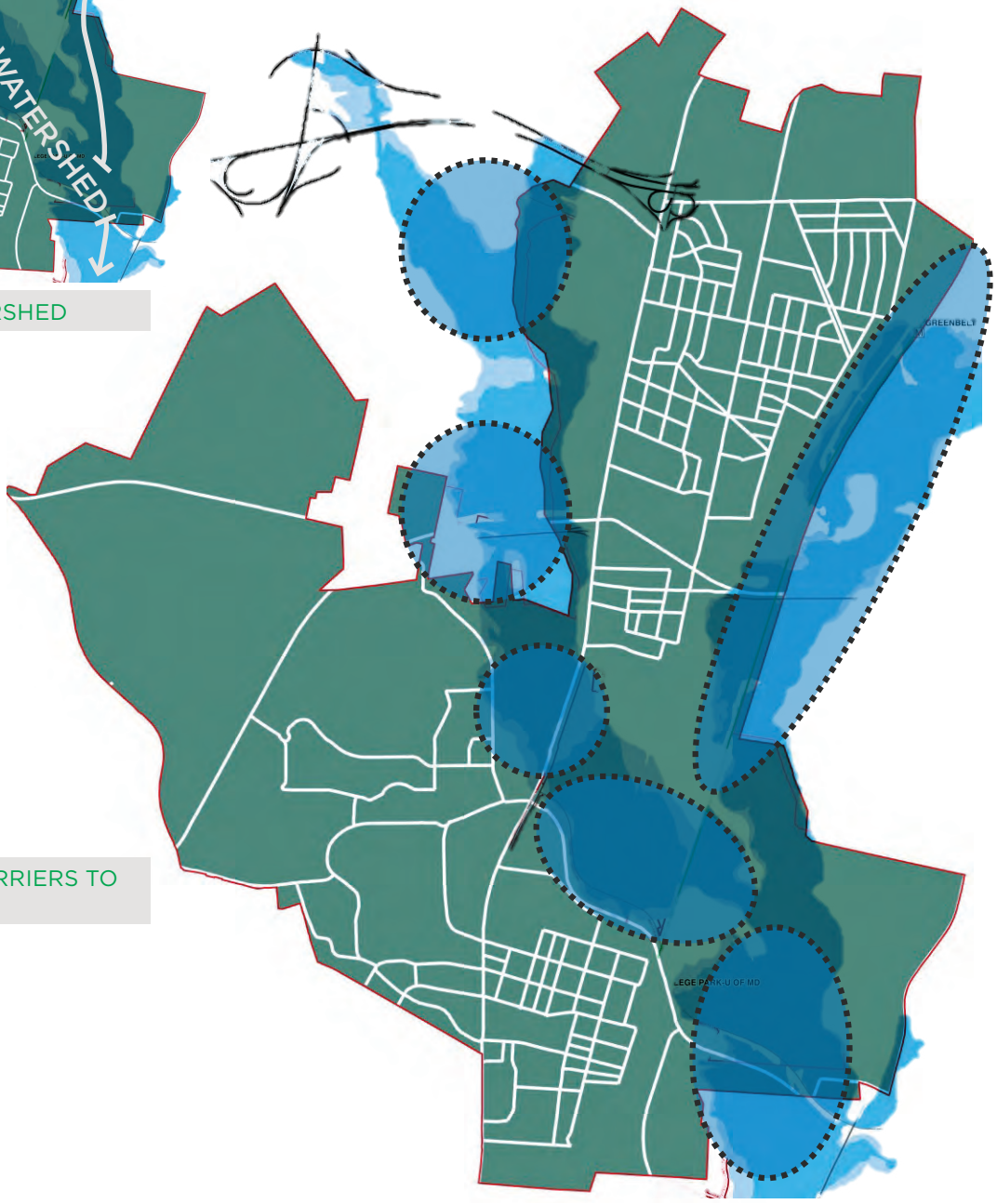


FIGURE 30 | WATERSHED BARRIERS TO CONNECTIVITY

LEGEND

- Existing Streets
- Watershed Areas
- Potential Barriers

TRANSIT (RAIL) CONTEXT

METRO RAIL AS POTENTIAL BARRIER

The Metro Rail corridor (Figure 31) creates mobility and connectivity for transit users, but limits the number of east-west connections between College Park, Greenbelt, and Berwyn Heights. This confines east-west travel in this part of Prince George's County to a few roadways including the Beltway (I-495), University Avenue (MD 193), and Paint Branch Parkway.

However, there are barriers (Figure 32) across MetroRail at the Greenbelt Station and the College Park Station. There are pedestrian connections, however, street network does not connect to these stations and therefore limits the ability for redevelopment and more effective connectivity. Additional crossings of the Metro Rail right-of-way are significant undertakings that require cooperation across jurisdictions, but could be considered in the future if growing traffic congestion from east/west travel creates serious challenges for the City.

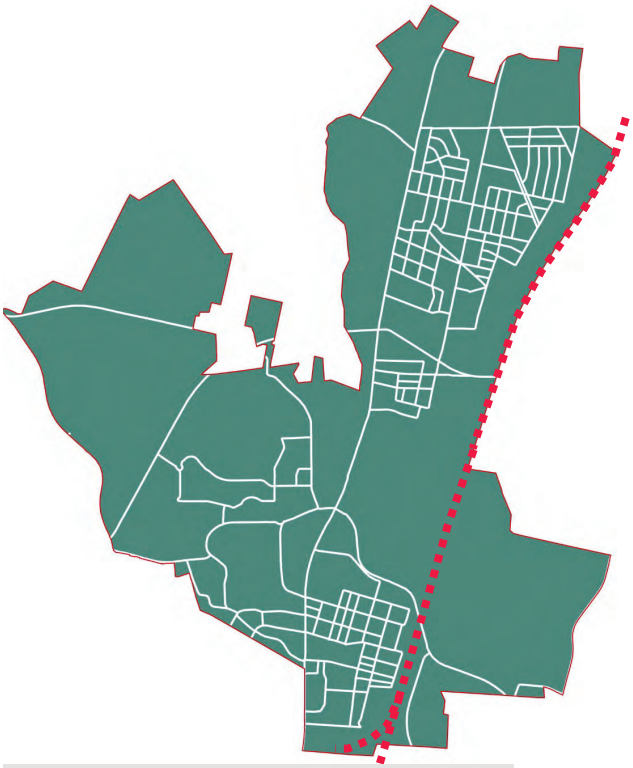


FIGURE 31 | EXISTING METRORAIL

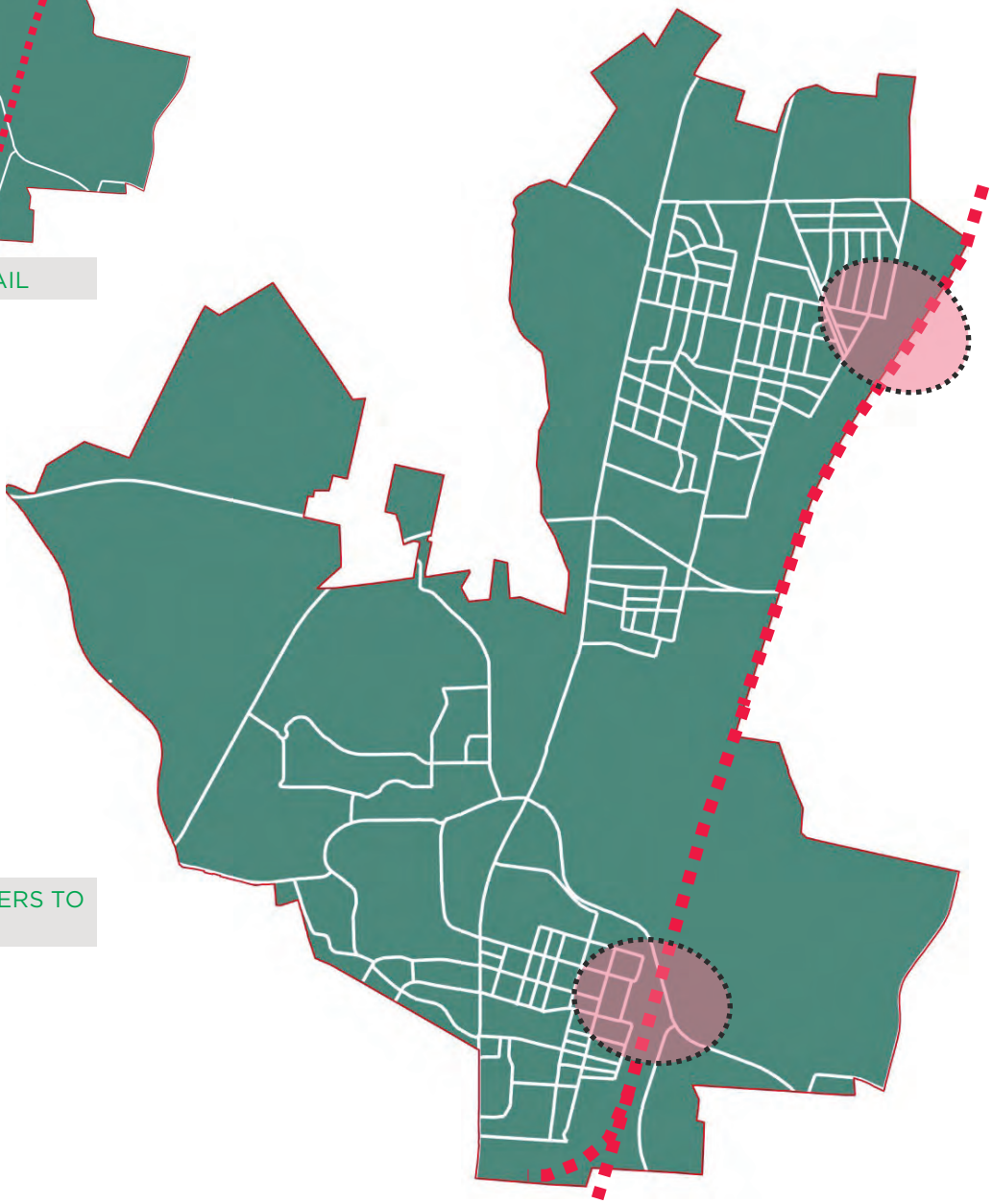


FIGURE 32 | METRORAIL BARRIERS TO CONNECTIVITY

PEDESTRIAN CONTEXT

SIDEWALK CONNECTIVITY

Walking as a viable transportation alternative is highly dependent on the availability of a safe and comfortable route for pedestrians to use to reach their destination. Most types of streets are not suitable for pedestrians to walk on safely, so a continuous, high quality sidewalk networks are essential to any effort to increase the number of trips taken on foot. Someone can live two blocks from a grocery store, but they will be unlikely to walk to complete that errand if one of those two block faces is on a busy street that has no sidewalk.

For community members with limited mobility from a physical disability or sensory impairment, sidewalks are even more crucial; a person in a wheelchair usually cannot travel along the grass berm at the edge of a property where there is a gap in the sidewalk. Thus, even small gaps in the sidewalk network can have meaningful consequences for the walkability of an entire neighborhood. Additionally, sidewalks should have a minimum width of 5 feet for ADA access and a minimum 10 feet for any sidewalks that also double as a bike trail.

Figure 33 represents the synthesis of the existing sidewalk connectivity conditions in College Park. Generally, there are generally three types of sidewalk conditions: (1) no sidewalks, (2) sidewalks on one side of the street, and (3) sidewalks on both sides of the street. The following figures explain this in more detail.

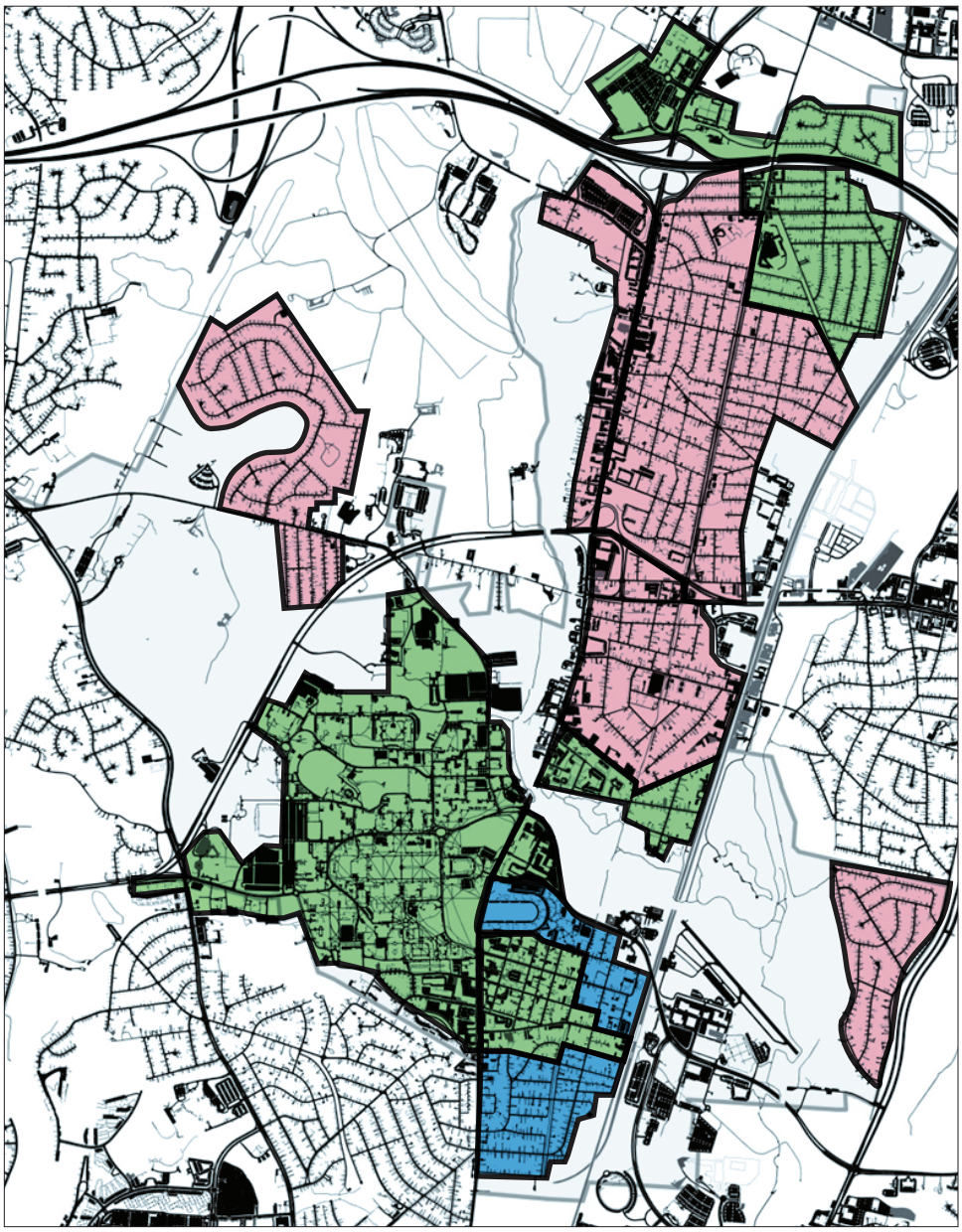


FIGURE 33 | SIDEWALK CONNECTIVITY SYNTHESIS

LEGEND

- Low Gaps in the Sidewalk Network
- Medium Gaps in the Sidewalk Network
- High Gaps in the Sidewalk Network

- ***No Sidewalks:*** As shown in Figure 34, many streets have no sidewalks. The street generally has on-street parking on one or two sides, and when vehicles are parked directly across from each other, it creates a "yield" condition for drivers - where one driver must stop and yield to the oncoming driver. This tends to create a context where vehicle speeds are naturally held in check by the surroundings and pedestrians can walk and/or bike in the street in a "shared" condition. In some locations, all modes share the street. The shared street is acceptable in slower speed conditions (<25 MPH and below), however, streets that have higher speeds (+25 MPH) need to have sidewalks and possibly bicycle lanes to create a safer condition for all modes of traffic. In some cases this may require additional easements to create enough space for a standard continuous sidewalk.

FIGURE 34 | NO SIDEWALK

Erie Street *- College Park, MD; Source: Google Streetview, 2015*

- ***Sidewalk on One Side of the Street:*** As shown in Figure 35, some streets have a sidewalk only on one side of the street. This is helpful in some cases because it provides one option for pedestrians, and potentially even enough width to install bike lanes, however, best practices for complete streets suggest having sidewalks on both sides of the street, therefore this condition is not considered a "best practice."

FIGURE 35 | SIDEWALK ON ONE SIDE

Dartmouth Avenue *- College Park, MD; Source: Google Streetview, 2015*

- ***Sidewalk on Both Sides of the Streets:*** As shown in Figure 36, there are many streets, especially in the Old Town Neighborhood that already have sidewalks on both sides of the street. While these streets meet the qualifications for complete streets, they also need meet the minimum width standards of 5 feet, which would be considered a "best practice." Also - inventory and analysis of the sidewalks would be prudent to determine if, of the existing sidewalk, how much would need to be fixed from cracks, roots raising the sidewalk, and other sub-standard conditions. Simple maintenance fixes can be a cost-efficient methodology for improving the overall health and "completeness" of the street.

FIGURE 36 | SIDEWALKS ON BOTH SIDES

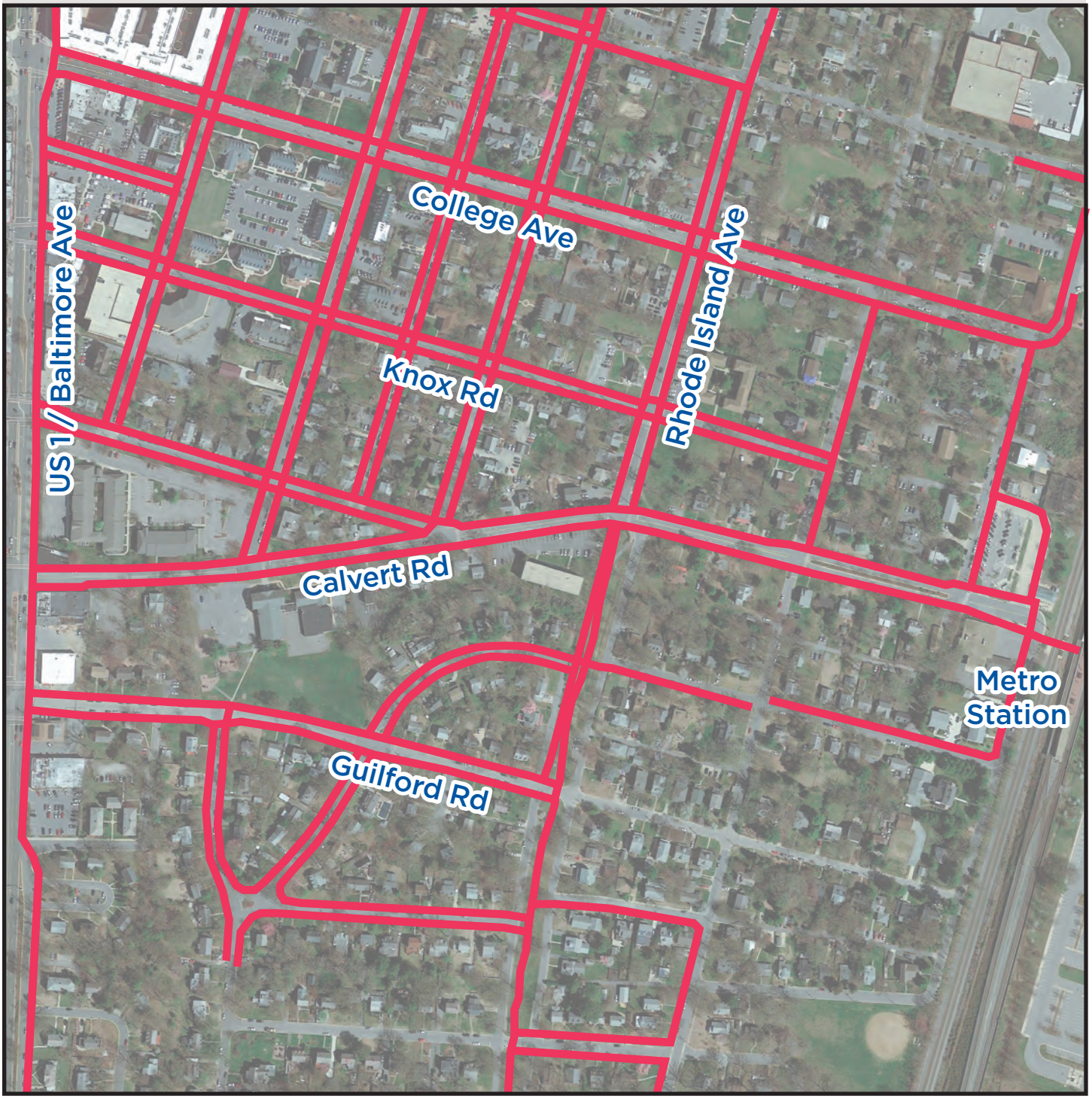
College Avenue *- College Park, MD; Source: Google Streetview, 2015*

In addition to simple presence or absence of sidewalks, the width, location and quality of sidewalk facilities are also important. In general, streets with more and faster traffic need sidewalks that are wider and better separated from motor vehicle traffic by landscaping, street furniture, or other barriers. New or reconstructed sidewalks also need to meet ADA requirements for width and grade.

On the following pages, Figures 37 & 38 show plan examples of the existing sidewalk network. In the Old Town and Calvert Hills neighborhoods, there are more sidewalks (especially connecting to the Metro Station). In the Daniels Park East neighborhood, there are far less sidewalks. They are located only on the major roads and the neighborhood streets function similar to Figure 34 with slower speeds creating a "shared space" condition.

PEDESTRIAN CONTEXT

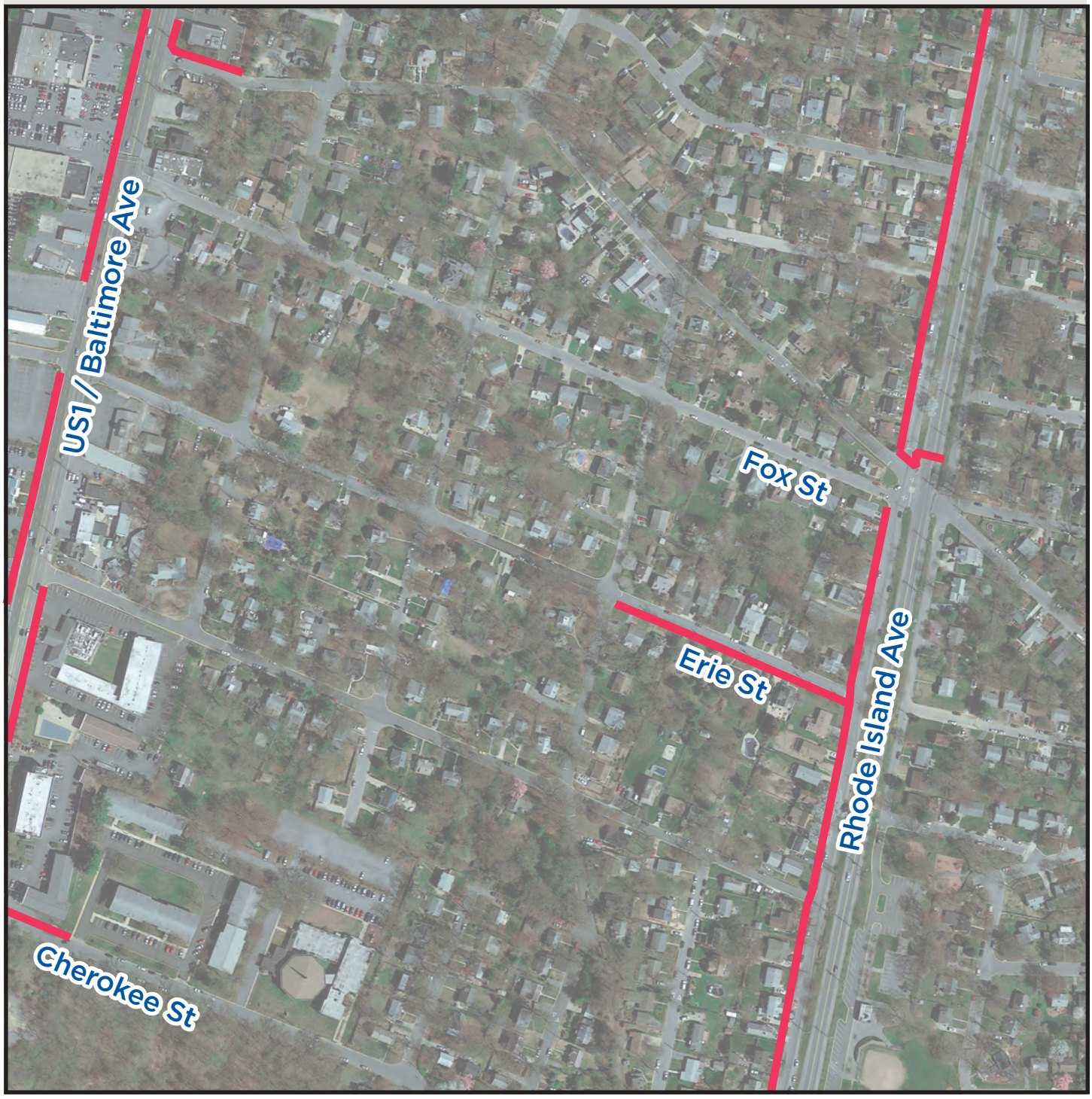
FIGURE 36 | EXISTING SIDEWALK NETWORK DIAGRAM - OLD TOWN AND CALVERT HILLS NEIGHBORHOODS



LEGEND

Sidewalks

FIGURE 37 | EXISTING SIDEWALK NETWORK DIAGRAM - DANIELS PARK EAST NEIGHBORHOOD



LEGEND

Sidewalks

LAND USE CONTEXT

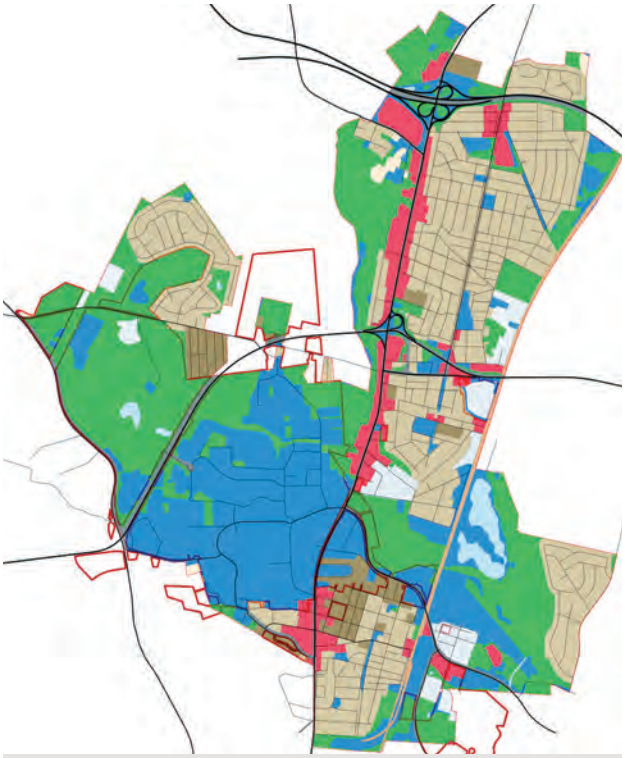


FIGURE 38 | EXISTING LAND USES

EXISTING LAND USE & REDEVELOPMENT OPPORTUNITIES

The land use context (Figure 38) in College Park is fairly typical of a town developed along an arterial roadway. The commercial areas have developed primarily along the US 1/ Baltimore Avenue Corridor with residential areas focused in the original settlement area of the City and northward along the old trolley line into the secondary neighborhoods.

As redevelopment occurs in College Park, it will most likely occur (Figure 39) in the land use areas of commercial and industrial areas as those areas have seen the most frequent redevelopment already.

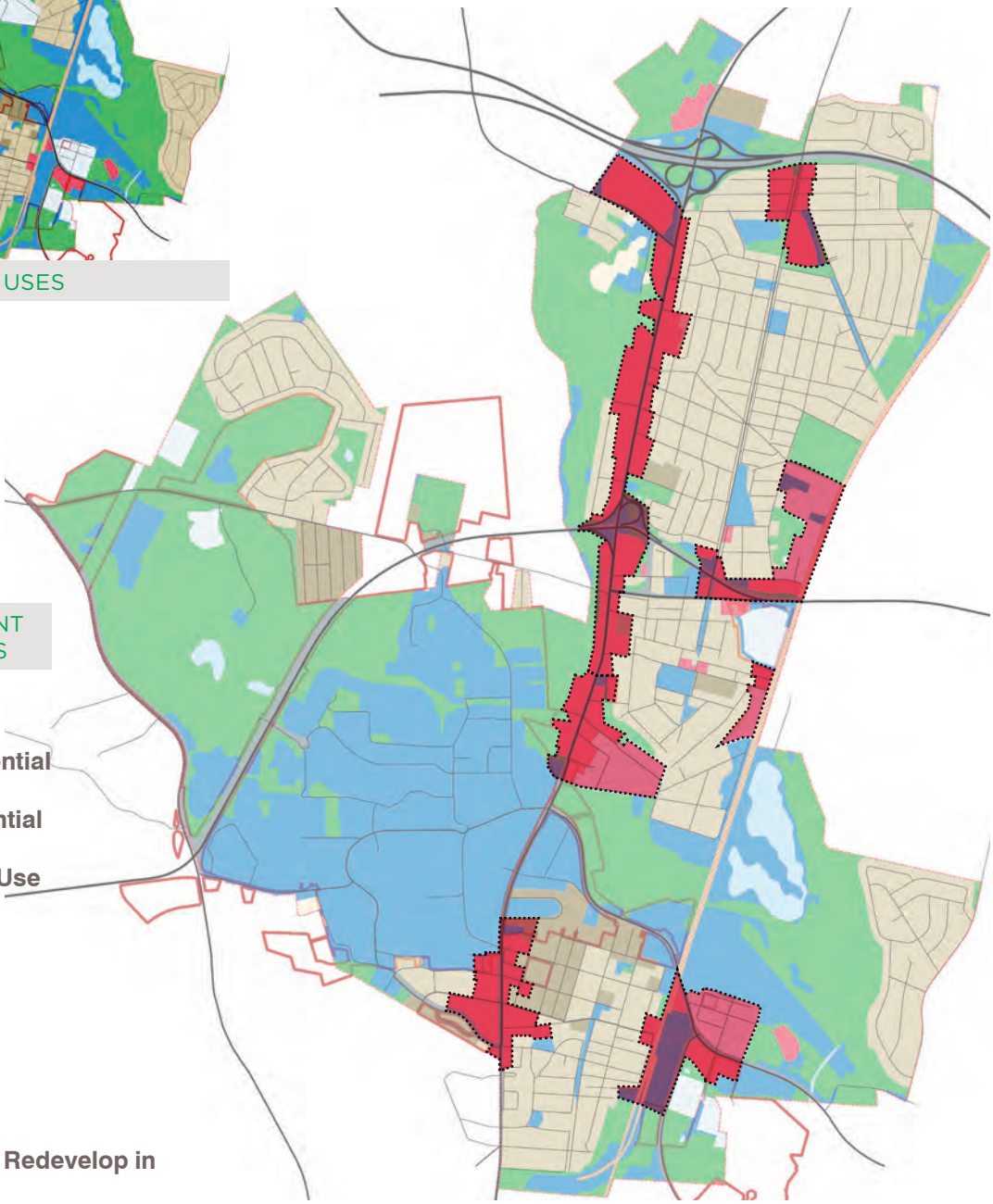


FIGURE 39 | REDEVELOPMENT OPPORTUNITIES

CURRENT DEVELOPMENT CONTEXT

CURRENT DEVELOPMENT PROJECTS

The red outlined areas from Figure 40 have been overlaid on the current development projects (Figure 41) to show how redevelopment has been occurring in those areas and will most likely continue to occur over the next several years.

These projects have been developed with the City's current guidelines for zoning and land use and could be further enhanced with eventual complete street policy.

Leveraging new development and redevelopment is a critical strategy to install complete street elements within College Park. While some enhancements will occur outside of potential redevelopment areas, the areas shown in Figure 39 and again in Figure 40, are seeing redevelopment and could see additional redevelopment in the future. Therefore, the investment into complete streets policy at the front end of this and future redevelopment is critical to ensuring a high quality of place and consistency for all modes of travel in College Park.

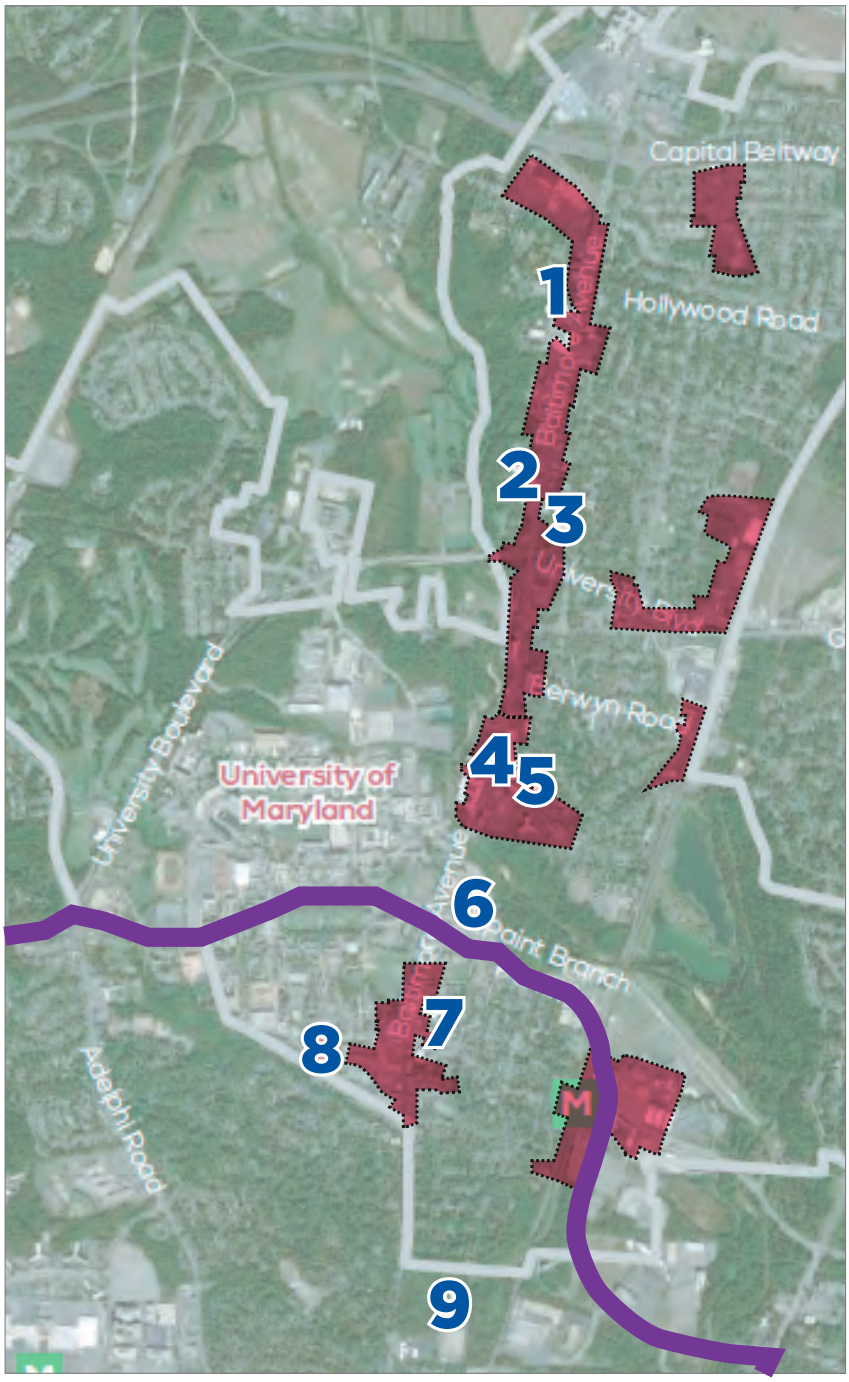


FIGURE 40 | EXISTING REDEVELOPMENT

LEGEND

1. TownePlace Suites
2. Monument Village
3. The Boulevard at 9091
4. College Park Place (Ph1)
5. College Park Place (Ph2)
6. The Hotel at UMD
7. Landmark College Park
8. Terrapin Row
9. Riverdale Park Station

Purple Line Alignment

Source: City of College Park

TYPICAL STREET CONDITIONS

TYPICAL STREET SECTIONS

The City of College Park streets vary from 25'-0" in width (right-of-way) at the narrowest to 146'-0" at the widest. The overall right-of-way can vary within different portions of the same street. For instance, Guilford Road varies from 110'-0" to 80'-0" west of US 1/ Baltimore Avenue in the Lord Calvert Manor Subdivision and varies from 60'-0" to 30'-0" east of US 1/ Baltimore Avenue in the Old Town Subdivision. The summary of the various right-of-ways are described in Appendix A. Because of the high variance in right-of-way throughout the City, the following typical existing street sections (Figure 41 - 48) were selected to represent the majority of street types in College Park, and to show the various conditions related to street content (sidewalks, street trees, etc), and character.

FIGURE 41 | HOLLYWOOD ROAD TYPICAL SECTION (STREET VIEW AND SECTION)

FIGURE 42 | LACKAWANNA STREET TYPICAL SECTION (STREET VIEW AND SECTION)

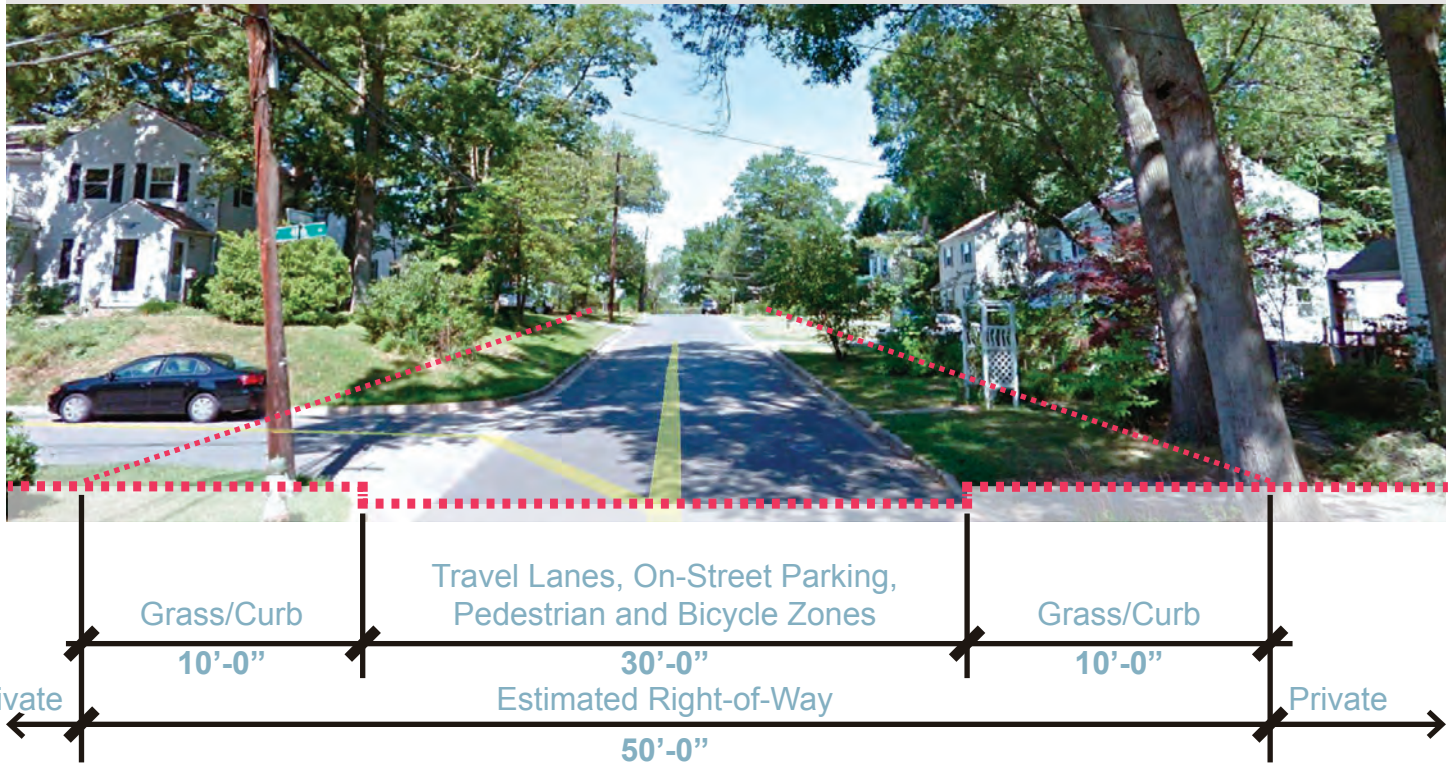


FIGURE 43 | GUILFORD ROAD (STREET VIEW AND SECTION)

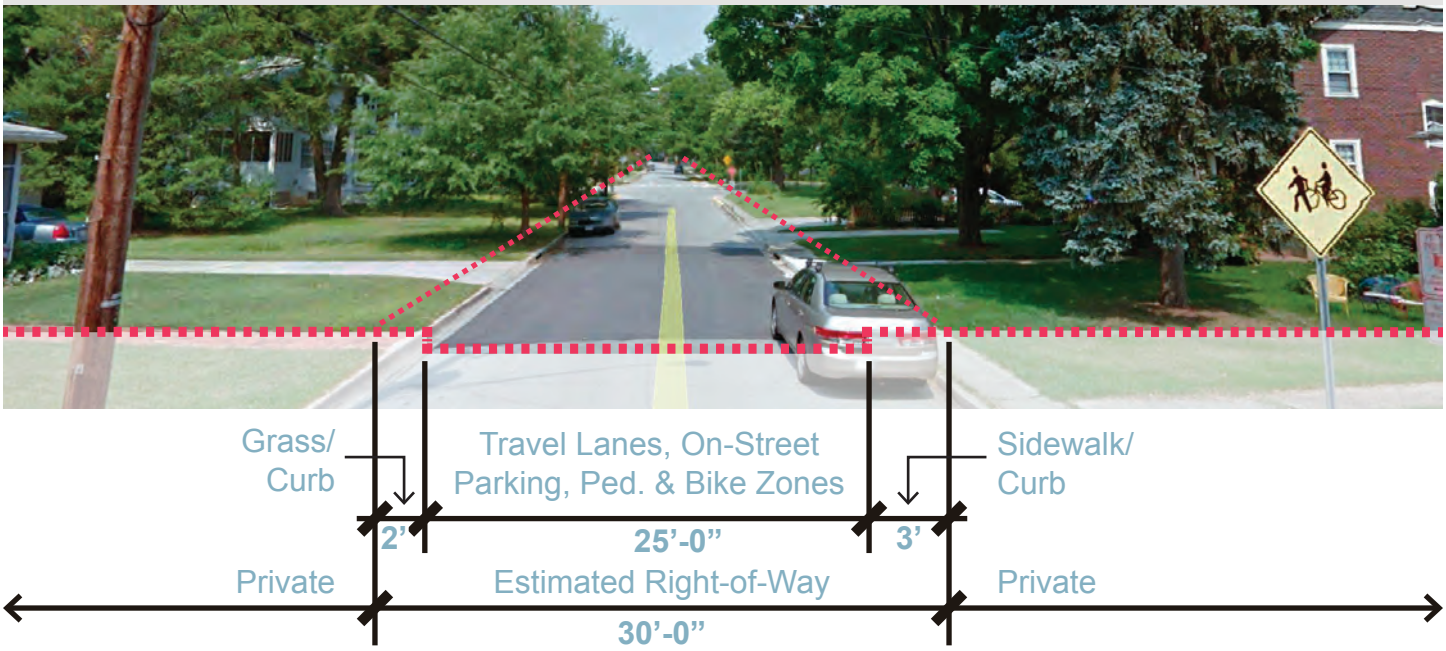


FIGURE 44 | GUILFORD ROAD (STREET VIEW AND SECTION)

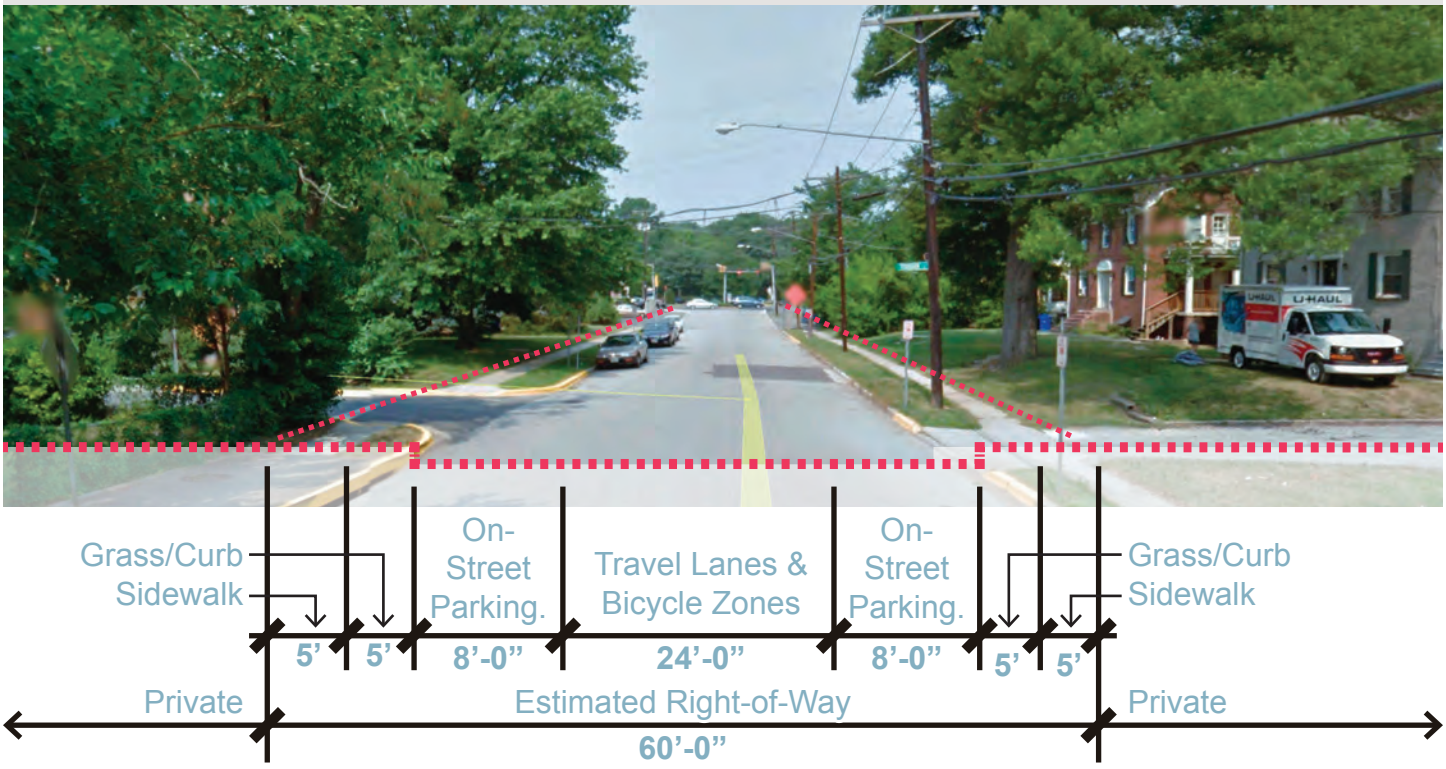


FIGURE 45 | RHODE ISLAND AVENUE (STREET VIEW AND SECTION)

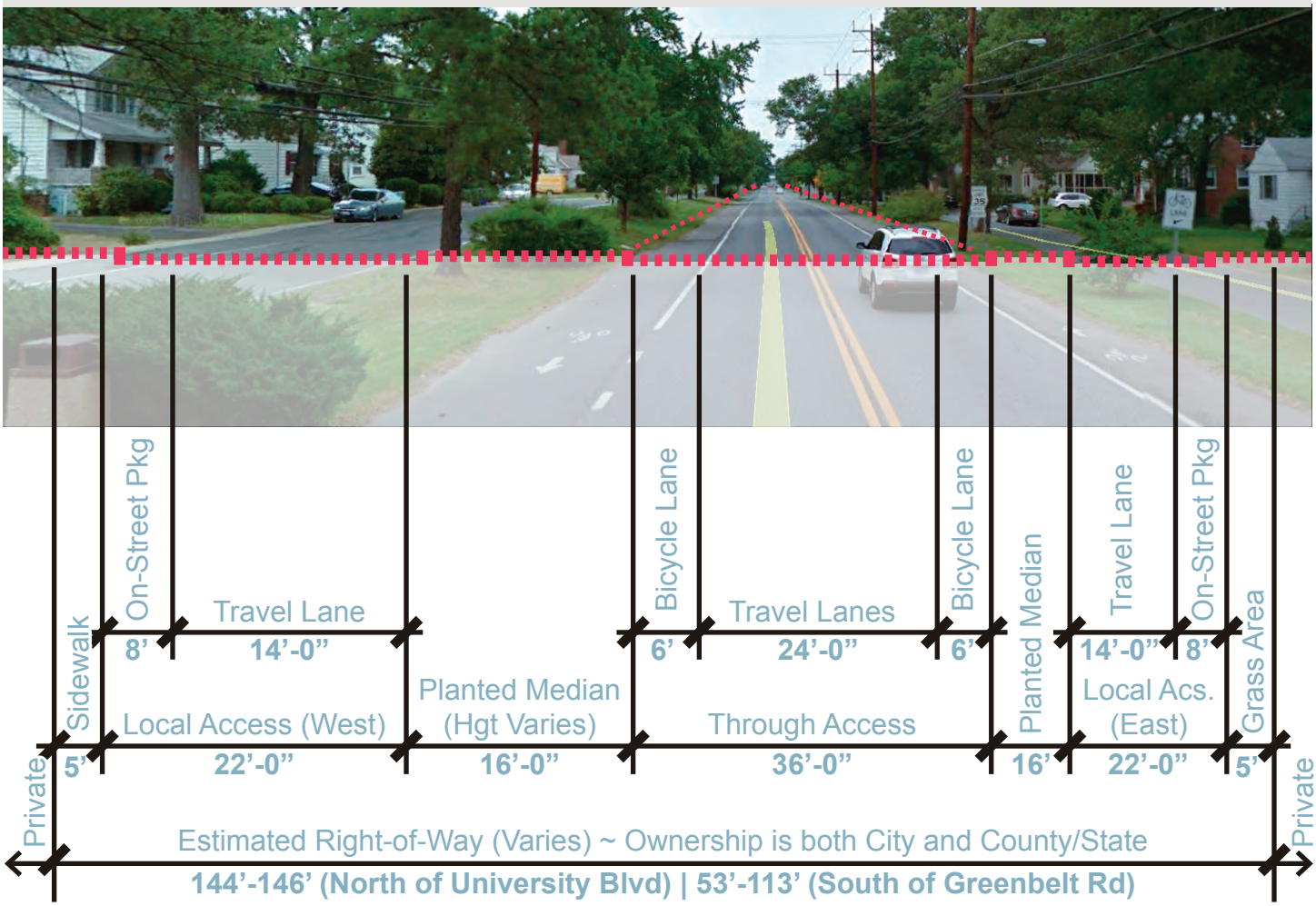
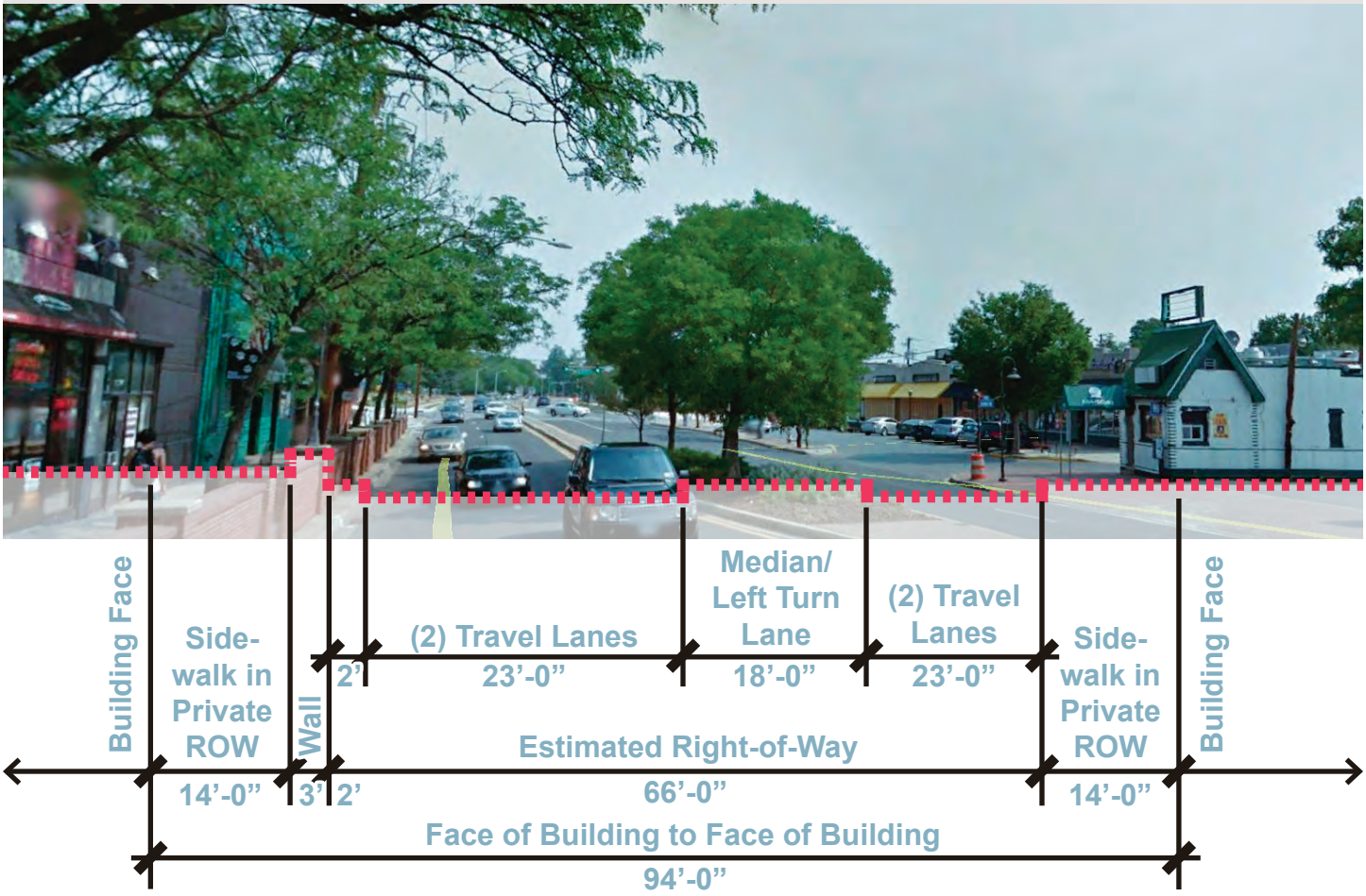


FIGURE 46 | BALTIMORE AVENUE / US 1 (STREET VIEW AND SECTION)



PROJECT PRINCIPLES

04

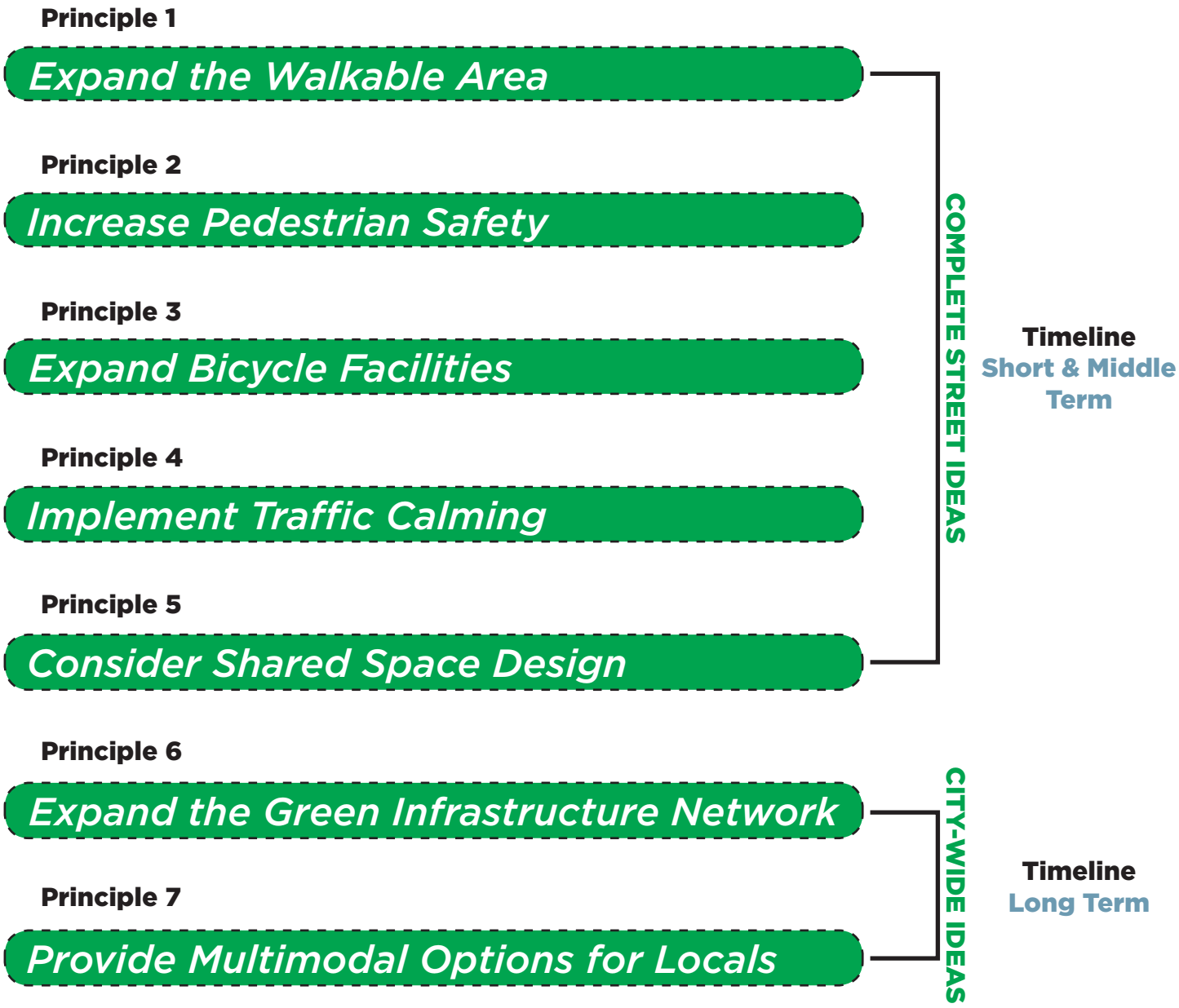
PRINCIPLES FOR DESIGN

GUIDING PRINCIPLES IDEAS

The analysis and synthesis of the challenges presented by College Park's existing transportation conditions suggested a set of seven principles for guiding the development of complete streets projects. Any project that is seeking to help the City meet its complete streets goals should be related to several of the principles on the following pages.

A synthesis resulted from the public involvement, existing conditions analysis, and the input from the various coordinating agencies, and a series of common principles for design and policy for the future complete streets for College Park were established. These guiding ideas were organized into seven over arching principles which create a framework for future decisions to be made. These guiding principles are intended to ensure that future plans and improvements to the corridor are context sensitive, reflect the needs and desires of the community, and establish a common core to lead all streets in College Park to become complete.

FIGURE 47 | PRINCIPLES FOR DESIGNING COMPLETE STREETS



PRINCIPLE 1: EXPAND THE WALKABLE AREA

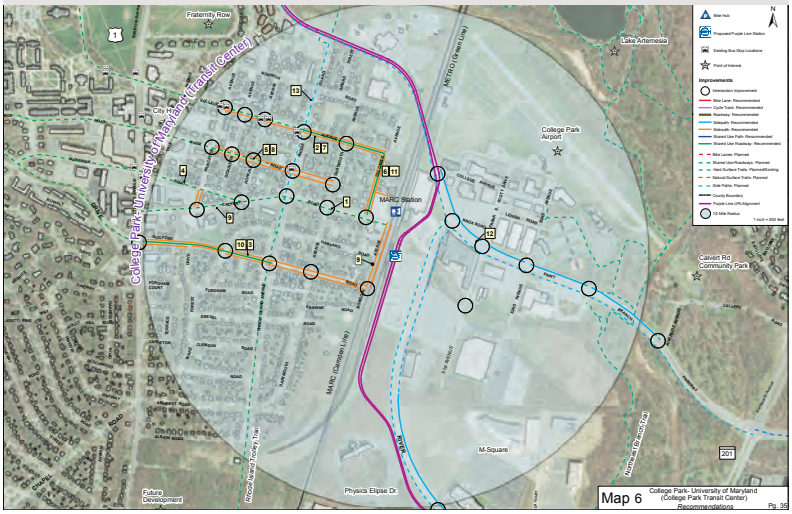
As shown earlier in the sidewalk analysis and synthesis, some neighborhoods of College Park are already very walkable and have a good network of sidewalks. Best practice suggests in order to benefit from increased walkability is to concentrate early efforts along the edges of existing walkable areas and to examine where small, simple connections can be made especially as it relates to connecting already highly walkable areas.

Creating a walkability master plan is the first step in identifying areas within the pedestrian network for gaps, safety issues, and possible opportunities for connectivity that are not part of the street right-of-way including pedestrian only sidewalks (Figure 47) and multi-use trails that would support both walking and biking connections. Figure 48 is an example of a walkability master plan showing recommendations to increase connectivity to the College Park Metro Station and proposed Purple Line Corridor.

FIGURE 48 | PEDESTRIAN FACILITIES

Interior "paseo" linking two streets with a pedestrian walk; Source: KAI

FIGURE 49 | WALKABILITY MASTER PLAN EXAMPLE



The Purple Line Corridor Access Study (CAST) makes recommendations for greater pedestrian access to the College Park Station; Source: MNCPPC

PRINCIPLE 2: INCREASE PEDESTRIAN SAFETY

Pedestrian safety and comfort is crucial to creating a complete transportation network in College Park. All residents and visitors to the City experience it on foot, and the quality of the pedestrian environment both shapes travel decisions and affects the general positive or negative impression left by a place. Simple installations such as curb extensions or reducing turning radii (Figure 50) can increase both overall walkability and pedestrian safety.

FIGURE 50 | EXAMPLES OF IMPROVED PEDESTRIAN SAFETY MEASURES

Pavers used to minimize turning radius in Ion, SC; Source: KAI

Curb Extensions in Oxnard, CA; Source: Dan Burden

PRINCIPLE 3: EXPAND BICYCLE FACILITIES

While College Park has a few key bicycle facilities such as the Trolley Trail, there is a demand for more facilities within the overall bikeable network. There are opportunities in some residential neighborhoods for bicycle boulevard or shared street designs, while other areas would be well served by bike lanes or trail connections/expansions, and bicycle parking adjacent to highly trafficked areas such as transit stations and downtown (Figure 51).

FIGURE 51 | BICYCLE FACILITIES

Separated Bike Facility in Vancouver, BC; Source: Paul Krueger

Bicycle parking adjacent to transit station; Source: KAI

PRINCIPLE 4: IMPLEMENT TRAFFIC CALMING

Traffic calming has the potential to improve pedestrian, bicyclist, and vehicular safety. Making sure that vehicle speed is appropriate for its context is essential to creating a pleasant environment in which people feel safe making transportation choices other than driving. It is also crucial to creating environments in which people want to linger, socialize, patronize businesses, etc.

Simple installations like "chokers" or "mini-circles" (Figure 52) can be implemented at lower cost and minimal disruption in residential neighborhoods. Further traffic analysis, conditions inventory and public engagement should be help to determine the context and needs of impacted streets to determine which strategy (or combination of strategies) will be most effective in each situation.

FIGURE 52 | TRAFFIC CALMING CONCEPTS

Mid-Block "Chokers" in Orlando, FL; Source: KAI

Mini-Roundabout in Seattle, WA; Source: Dan Burden

PRINCIPLE 5: CONSIDER SHARED SPACE DESIGN

Shared space design that allows motor vehicles, bicycles, and pedestrians to all operate safely in the same space is a principle that can both increase safety and create enjoyable places with unique character. This is also a good option for areas where right of way is constrained.

FIGURE 53 | SHARED SPACES

Shared Residential Street in Provincetown, MA; Source: Wikipedia

Shared Space in Mississauga, Ontario; Source: KAI

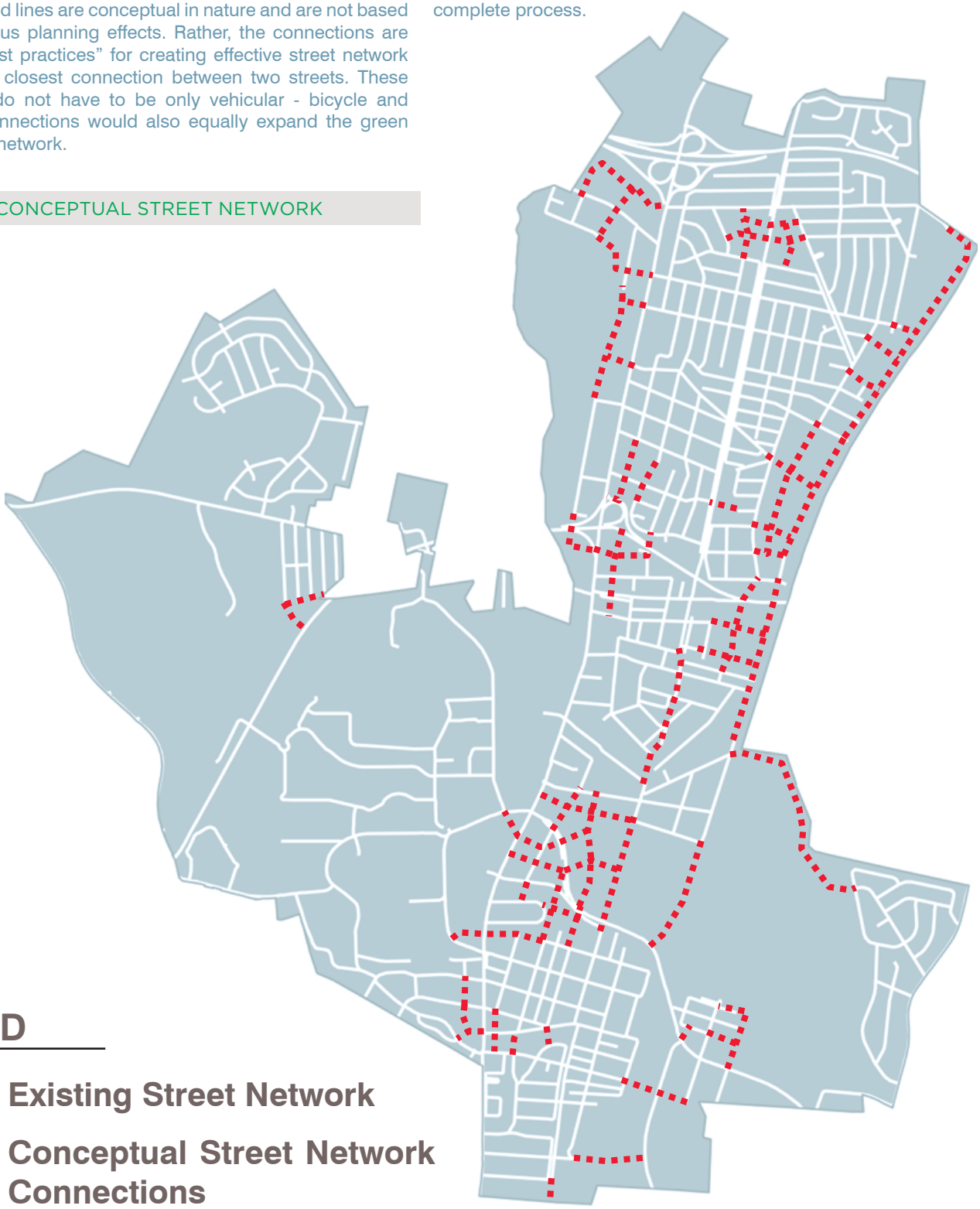
PRINCIPLE 6: EXPAND THE GREEN INFRASTRUCTURE NETWORK

Figure 54 below shows a concept for reconnecting (the red dashed lines) portions of the street network to mitigate some of the previously explained consequences of point loading and lack of parallel routes.

The red dashed lines are conceptual in nature and are not based on any previous planning effects. Rather, the connections are based on "best practices" for creating effective street network - seeking the closest connection between two streets. These connections do not have to be only vehicular - bicycle and pedestrian connections would also equally expand the green infrastructure network.

It is important to note that these concepts have not been vetted in a public setting, nor have any property owners or public agencies been contacted to discuss the connection of these roadways. Further studies for each red dashed line connection is recommended and public participation is critical to ensure a complete process.

FIGURE 54 | CONCEPTUAL STREET NETWORK



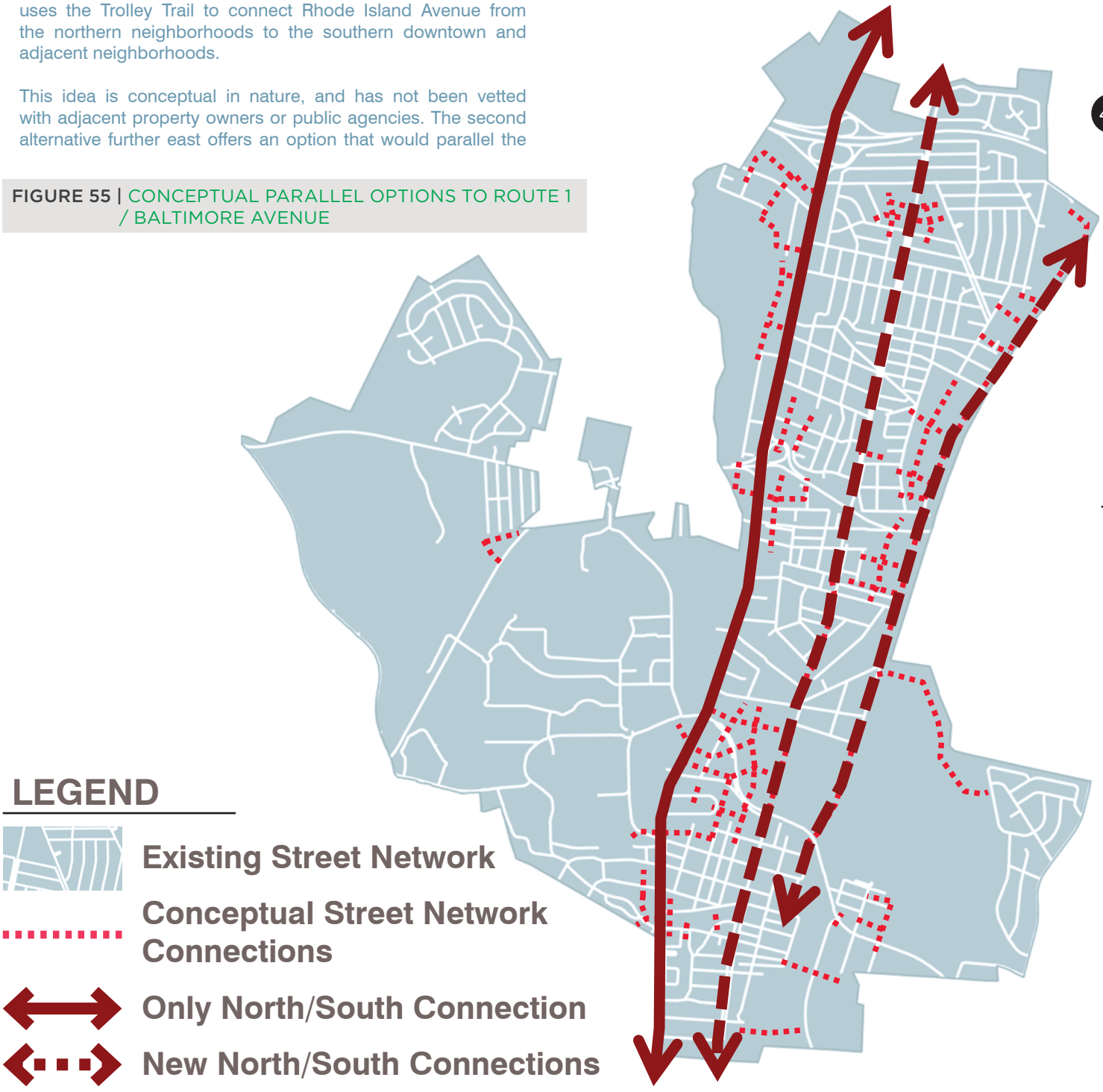
PRINCIPLE 7: PROVIDE MULTIMODAL OPTIONS FOR LOCALS

Figure 55 shows two opportunities, advanced through connected street network, to provide two new north-south street options for College Park. US 1/ Baltimore Avenue is the only north-south connection within the City's boundaries and while the current SHA design plans for US 1 may provide some relief for through trips on US 1, it will not provide alternatives for local traffic to get from the neighborhoods to the downtown and campus areas.

The alternative north-south connection just east of US 1, uses the Trolley Trail to connect Rhode Island Avenue from the northern neighborhoods to the southern downtown and adjacent neighborhoods.

This idea is conceptual in nature, and has not been vetted with adjacent property owners or public agencies. The second alternative further east offers an option that would parallel the MetroRail line, especially since it is a well-used transit option. Providing alternative north south routes through College Park is a major challenge and is crucial to addressing some of the persistent traffic issues in the City. However, further public involvement and agency coordination is suggested before pursuing this concepts.

FIGURE 55 | CONCEPTUAL PARALLEL OPTIONS TO ROUTE 1 / BALTIMORE AVENUE



PUBLIC INPUT + DESIGN IDEAS

05

PUBLIC WORKSHOP SUMMARY

PUBLIC INPUT

During development of the Complete Streets plan, public input was gathered through a meeting that included a presentation and workshop. After a presentation on Complete Street Best Practice and a summary of the existing conditions in College Park, participants received handouts with depictions of various complete street treatments (Figure 56) and explanations of their purpose and appropriate context.

Cross sections and photographs (Figure 57) of existing streets were used to communicate the various street conditions in College Park. Additionally, prototypical examples of traffic calming options (Figure 58) were provided for participants to think about conditions at various intersections. Several blank cross sections on these handouts were available for participants to use to record their recommendations for the street in the future.

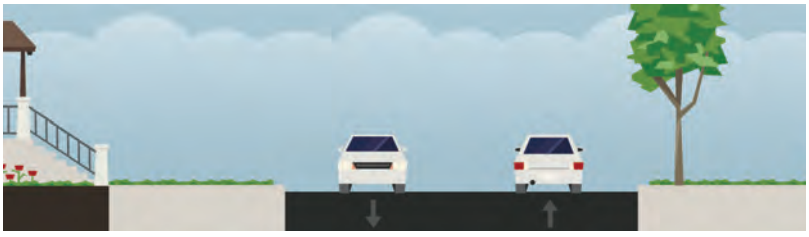
FIGURE 56 | TYPICAL COMPLETE STREET TREATMENTS (HANDOUT)

		Downtown Streets			Neighborhood Streets			Shared Streets	
Feature	Range of Widths	Downtown One Way	Downtown Two Way	Downtown Thoroughfare	Neighborhood Main Street	Neighborhood Residential Street	Yield Street	Residential Shared Street	Commercial Shared Street
Bus-Only Lane	11'-15'								
Bike Lane	5'-7'								
One Way Separated Bike Lane	8'-11'								
Two Way Separated Bike Lane	11'-15'								
Curb Extensions	7'-9'								
"Bus Bulb" Curb Extensions	7'-9'								
Raised Median with Turn Pocket	10'-13'								
Bike Boxes	N/A								
"Parklets"	7'-9'								
Pedestrian Safety Island	5'-12'								
"Checkered" Parking Pattern	7'-9'								
Bike Racks in Roadway	4'-9'								
Public Furniture in Roadway	4'-9'								
Pervious Pavements	N/A								

Appropriate	
Context Dependent	
Not Recommended	

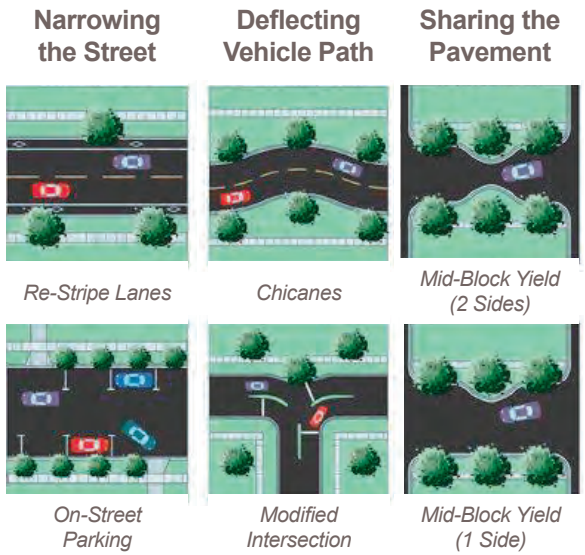
Complete streets options with their sizes and appropriate contexts; Source: KAI

FIGURE 57 | CROSS-SECTION EXAMPLES



Example cross-sections from public workshop; Source: KAI

FIGURE 58 | TRAFFIC CALMING DIAGRAMS



Traffic calming options | Source: KAI

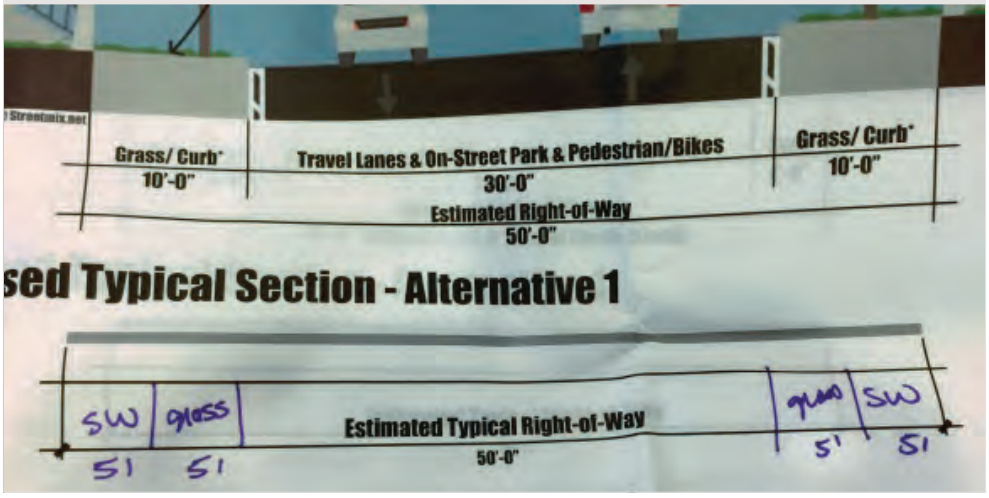
Participants were encouraged to highlight locations (Figure 59) where they felt additional bicycle and pedestrian facilities and/or new street connections would increase overall walkability and safety. Participants were also asked to "experiment" with thinking through complete streets treatments for a selection of College Park streets that are typical of the street types found in the city, or are particularly notable due to existing conditions.

Using this information and through discussions with project staff, participants were able to recommend possible alternative configurations (Figure 60) of the several example streets. The same set of complete streets tools, however, could be applied to any street in the city that is within an appropriate context.

FIGURE 59 | PARTICIPANT INPUT FROM THE PUBLIC MEETING

Public workshop participant sketch locating areas for potential sidewalk and street connections; Source: KAI

FIGURE 60 | ALTERNATIVE SECTION DRAWN AT THE PUBLIC WORKSHOP



Public workshop participant sketch | Source: KAI

DESIGN IDEAS

THE KIT OF PARTS APPROACH

The ultimate outcome of this report and project is policy language, not specific recommended changes to individual streets. However, to use the resultant policy get from the analysis of existing conditions described in the Synthesis section and the priorities and concerns identified by public meeting participants to satisfactory solutions requires familiarity with the most effective complete streets tools and approaches.

The following "kit of parts" is intended to communicate the purpose, technical specifications, and appropriate applications of these treatments.

MANAGING MOTOR VEHICLE SPEED

As explained in Understanding the Problem, inappropriately high motor vehicle speeds are a major barrier to local streets that feel safe for pedestrians and bicyclists. They also create commercial and arterial streets that are hard to cross and uncomfortable to walk next to on sidewalks.

The following group of treatments (Figures 61 - 65) can be used to slow motor vehicle speeds, and are each a different approach to the general strategy of "traffic calming." Traffic calming generally achieves its goals by deflecting the vehicle path, narrowing the street or constraining the driver's field of vision, or necessitating that the driver yield.

FIGURE 61 | RAISED INTERSECTION

A raised intersection both slows motor vehicles and provides a more protected crossing for pedestrians | Source: NACTO

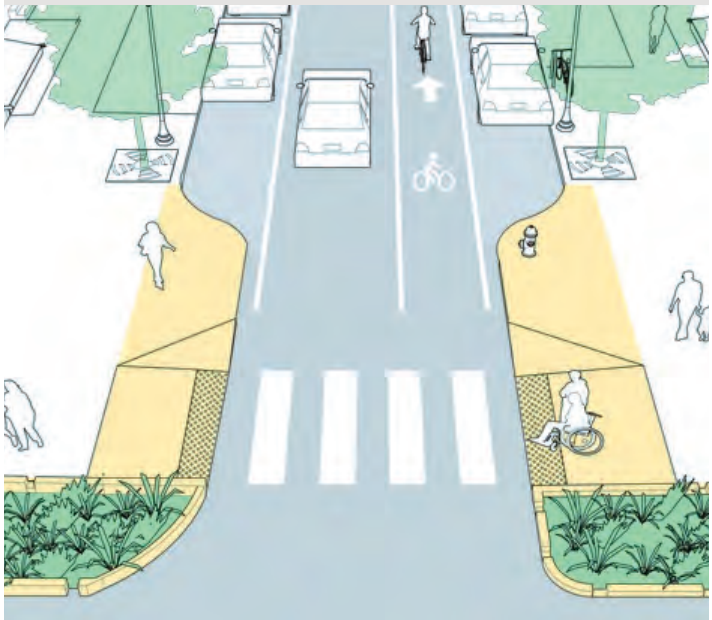
FIGURE 61 | SPEED HUMP

Speed humps use vertical deflection to slow motor vehicles and are among the most familiar traffic calming measures. | Source: NACTO

FIGURE 62 | PINCH POINT

A pinch point requires motor vehicles to yield. The depicted design allows bicycles to continue | Source: NACTO

FIGURE 65 | NARROWED STREETS



The above image combines parking, curb extensions and bike lanes to narrow the street and slow motor vehicles. | Source: NACTO

FIGURE 66 | MINI-ROUNDABOUT

Mini roundabouts slow cars using horizontal deflection. This is the same strategy employed by chicanes and checkered parking patterns : NACTO

DISCOURAGING CUT-THROUGH TRAFFIC

Often when projects are proposed that provide pedestrian, bicycle, or transit facilities on streets with heavy car traffic nearby neighbors worry that drivers will respond to any slowing on those streets by "cutting through" neighborhoods. This can be a valid concern, but it is possible to design local and neighborhood streets so that they are unappealing to through traffic, and promote appropriate behavior for the context.

First and foremost, all of the treatments above that slow vehicle traffic will make cut through travel less appealing. Additionally, some studies have found that it is actually residents who account for most neighborhood speeding, so traffic calming can be beneficial even in the absence of a cut through traffic problem.

In addition to calming measures, there are other techniques that discourage cutting through neighborhoods. Some examples of these techniques are:

- **Partial Street Closure**: Partial street closures consist of constructed obstructions to block one side of the street. One direction of traffic is diverted to another route. Half closures are often called opposing one-way segments (Figure 67). The obstructions can range from curbed landscape areas (also used for rain gardens) to colored paving and side-by-side bollards.

FIGURE 67 | OPPOSING ONE-WAY SEGMENTS

Strategically located one way segments can have a similar effect, making paths through neighborhoods circuitous without changing much for local drivers. | Source: NACTO

- **Median Barriers:** Median barriers are raised islands located in the middle of a street and continuing through an intersection. Median barriers are implemented to block cut-through movement of motor vehicle traffic at a cross street. Median barriers can block left turning motorists, which can benefit pedestrians. They are also called island diverters or diagonal diverters (Figure 68).

FIGURE 68 | DIAGONAL DIVERTER

An example from Berkeley of a diagonal diverter in a residential neighborhood | Source: NACTO

- **Forced Turn Islands:** Forced turn islands are also called forced turn channelizations, pork chops, or right turn islands. They prevent traffic from certain movements when approaching an intersection.

FIGURE 69 | FORCED TURN ISLAND

Forcing motor vehicles to turn with a physical diverter is one way to keep cars from cutting through neighborhood streets because through drivers strongly prefer a direct path. | Source: NACTO

ACCOMMODATING BICYCLISTS

A range of facilities can provide safe and comfortable environments for bicyclists. They are generally classified by their level of bicyclist separation from traffic. The least separated facilities are simple pavement markings and the most separated are cycle tracks or multi-use paths. Typically, where vehicle speeds and volumes are lowest, the lowest level of separation is appropriate, especially in conjunction with design measures to keep speeds low. Where motor vehicle speeds or volumes are high, more physical separation between drivers and bicyclists greatly increases both safety and comfort for people using the facility. The following facilities represent viable options for installation in different conditions in College Park:

- **Sharrows:** These (Figure 70) are pavement markings in the middle of the travel lane that designated and alert drivers that cyclists will be using the whole lane as a bicycle facility. These are typical used when there is very limited right-of-way and speeds do not exceed 30 MPH.

FIGURE 70 | SHARROWS

Sharrows; lowest separation bicycle facility | Source: KAI

- **Buffered Bike Lanes:** These (Figure 71) lanes are typically 4'-0" to 5'-0" wide bicycle lanes with a painted striped gap (2'-0" to 3'-0") between the bike lane and the travel lane. The striped area provides additional width for the cyclist and allows for a safer distance from moving vehicles, especially wider vehicles such as buses.

FIGURE 71 | BUFFERED BIKE LANES

A bike lane with a paint buffer to provide some distance between motor vehicles and bikes| Source: KAI

- **Cycle Track Lanes:** Cycle tracks (Figure 72) are both directions of a bicycle lane that are separated from the travel lane and are for cyclists only. They are typically 8'-0" in width and are separated by either a 3'-0" curbed concrete/landscape median or by vertical candlesticks with reflective surfaces.

FIGURE 72 | CYCLE TRACK LANES

The most physically separated on street bike facility| Source: KAI

- **Multi-Use Path/Trails:** These (Figure 73) are excellent for bicycle and pedestrian facilities that are not part of the roadway. In order to give both pedestrians and cyclists enough space to pass each other, the minimum width of a multi-use path/trail is 8'-0", with the preferred width ranging from 10'-0" to 12'-0" based levels of use, context, and available budget.

FIGURE 73 | MULTI-USE PATHS

An off street path or trail with no motor vehicles| Source: KAI

DESIGN IDEAS

PRIORITIZING PEDESTRIAN ACCESS

Making sure that it's safe and comfortable to walk to in College Park will be an essential goal of any effective complete streets policy. All people are pedestrians, even if only from their parking space to their destination, pedestrian trips are crucial for getting from transit to destinations, and having pleasant and enjoyable spaces to walk is integral to a place feeling livable.

As public entities covered under Title II of the Americans with Disabilities Act (ADA), the City of College Park is required and have a major responsibility to implement accessibility in their facilities and programs. There are fundamental improvements for sidewalks that should be considered as a baseline of any sidewalk master plan. The American with Disabilities Act (ADA) provides standards and guidance for sidewalks including standard widths, crossing ramp dimensions, and various ramp alternatives for different contexts.

Pedestrians are an integral part of the transportation system and should be equally prioritized with other modes, such as automobiles. For example, the decision to design a corner with a wide turning radius to benefit trucks should be carefully weighed against the negative impacts that wide turning radii have on pedestrians. Institutionalized standards, policies, design guidelines, and public participation should provide all pedestrians equal service within the transportation system.

The following guidelines have been established by the Federal Highway Administration (FHWA) to assist local jurisdictions with determining when and where pedestrian facilities are needed:

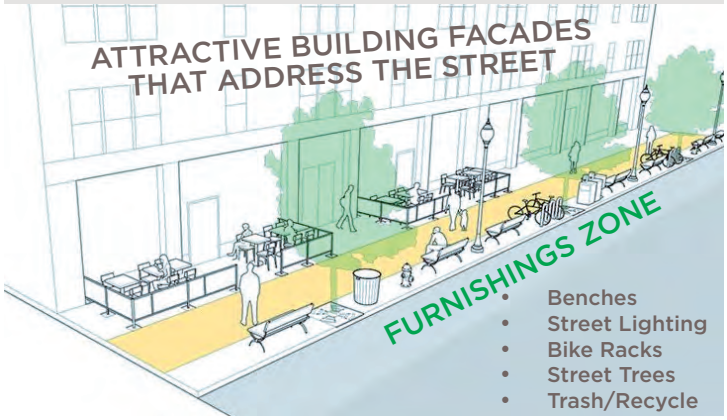
- Develop sidewalks as integral parts of all city streets;
- If land use plans anticipate pedestrian activity, construct sidewalks as part of street development;
- Sidewalks should connect nearby urban communities;
- Provide sidewalks in rural and suburban areas at schools, local businesses, and industrial plants that result in pedestrian concentrations;
- Provide sidewalks whenever the roadside and land development conditions are such that pedestrians regularly move along a main or high-speed highway, and;
- Incorporate sidewalks in rural areas with higher traffic speeds and general absence of lighting.

Installing sidewalks is critical to providing pedestrian access. However, prioritizing the needs of pedestrians extends beyond the basic step of providing a sidewalk network. The quality of the pedestrian experience should also be addressed during the project planning process. The first step towards providing a quality pedestrian experience is to provide a buffer zone that separates the pedestrian from the motorist. This can be accomplished by providing a wide sidewalk or a sidewalk setback, such as a planting strip. In addition, planners and designers should consider the following pedestrian oriented details (Figure 74):

- Attractive building facades (e.g., pedestrian scale, street oriented windows and building entrances);
- A Furnishings Zone with:
  - Street trees and landscaping;
  - Benches;
  - Pedestrian oriented signs and traffic control devices; and
  - Public art.

When pedestrian details are included, pedestrians are more comfortable using the sidewalk facilities, neighborhoods are safer because there are more people out in the community, and commercial areas thrive.

FIGURE 74 | SIDEWALK WITH PEDESTRIAN ORIENTED DETAILS

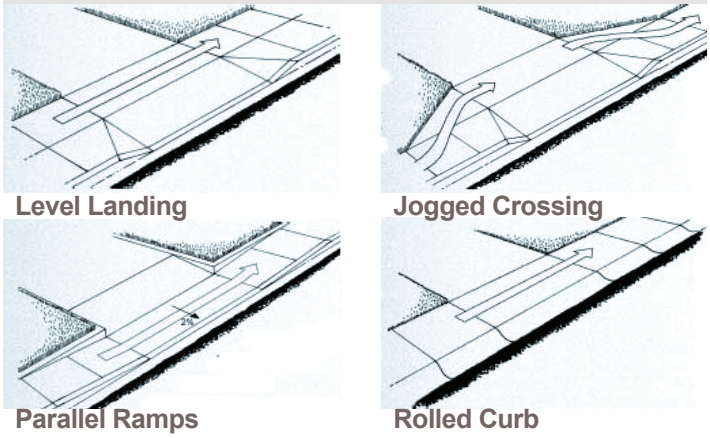


Standard sidewalks can be enhanced with trees, grass or street furniture separating them from the roadway | Source: NACTO

Driveway Crossings

Driveway crossings, especially in residential areas, are the most common location for changes in cross slope within the sidewalk corridor. Both wheelchair users and other walking pedestrians are also more prone to stumble or fall on surfaces with rapidly changing cross slopes. Therefore, whenever possible, driveway crossings without level landings should be replaced with the Best Practices shown in Figure 75.

FIGURE 75 | DRIVEWAY CROSSINGS



Best Practices for Sidewalks Crossing Driveways | Source: FHWA

LEVERAGING COMPLETE STREETS FOR PLACEMAKING

"The design of a street is only one aspect of its effectiveness. How the street fits within the surrounding transportation network and supports adjacent land uses will also be important to its effectiveness."

~ City of Charlotte "Urban Street Design Guidelines"

Complete streets are primarily focused on safe and comfortable travel by all modes, but the techniques of complete streets are also applicable to creating walkable and livable environments.

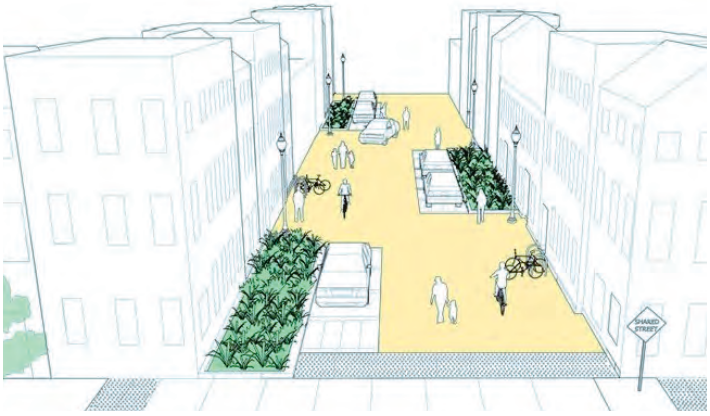
Communities such as Indianapolis, Charlotte, Savannah, San Francisco, and Denver have created community-based street policies that turn the transportation planning and design process upside-down, acknowledging that the role of streets is to build communities, not the other way around. Complete Street Policies in these example communities also specifies "Placemaking" guidance as well as how to accommodate all modes.

Place-based plans, policies, and programs allow downtown and village streets to become destinations worth visiting, not just through-ways to and from the workplace or the regional mall. Transit stops and stations can make commuting by rail or bus a pleasure. Neighborhood streets can be places where parents feel safe letting their children play, and commercial strips can be designed as grand boulevards, safe for walking and cycling, allowing for both through and local traffic.*(Source: Project for Public Spaces*)

Some of the techniques for including placemaking with Complete Streets are as follows:

- **Shared Street Space:** Low-volume residential streets often have narrow or crumbling sidewalks. Many of these streets operate de facto as shared spaces, in which children play and people walk, sharing the roadway with drivers. Depending on the street's volume and role in the traffic network, these streets have the potential to be redesigned and enhanced as shared streets. Shared streets can meet the desires of adjacent residents and function foremost as a public space for recreation, socializing, and leisure.

FIGURE 76 | SHARED STREET SPACE



Design features that keep automobile speeds very low are essential to safe operation of a shared street. | Source: NACTO

- **Public Plazas/Parks:** Reclaiming pavement within a given street right-of-way for other uses can be part of an overall strategy for increasing safety and livability. This is done by working with the local community to generate leadership and support for transforming these underutilized and/or left-over areas of roadway into public spaces for surrounding residents and businesses. Using low-cost materials, such as epoxied gravel, movable planters, and flexible seating, interim public plazas reconfigure and revitalize intersections that might otherwise be unsafe or underutilized. As noted early, these spaces can be programmed and maintained by local residents and/or non-profit partners.

FIGURE 77 | ACTIVATING LEFT OVER SPACE

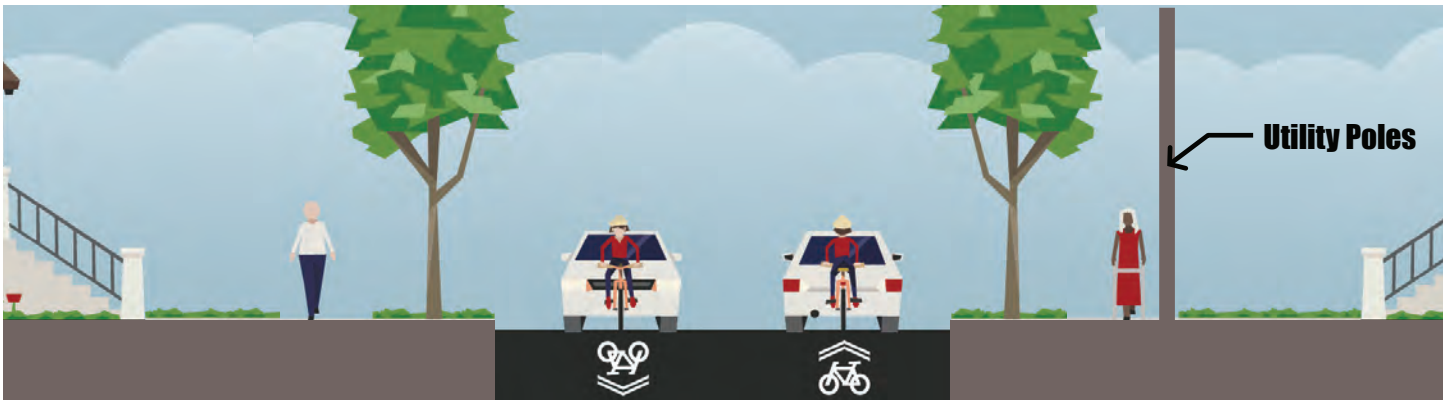
Low cost materials such as planters can be used to create pedestrian plazas and programmed space, either permanently or as a pilot project before permanent curb is installed. | Source: NACTO

CONCEPTUAL DESIGN EXAMPLES

BASIS FOR CONCEPTS

Based on the input received at the public meeting, a handful of conceptual designs were sketched to show how the application of Complete Street Policy could transform the example streets, example intersection, and a trail connection in the following Figures (77-80).

FIGURE 77 | HOLLYWOOD ROAD: EXISTING AND PROPOSED CONDITIONS



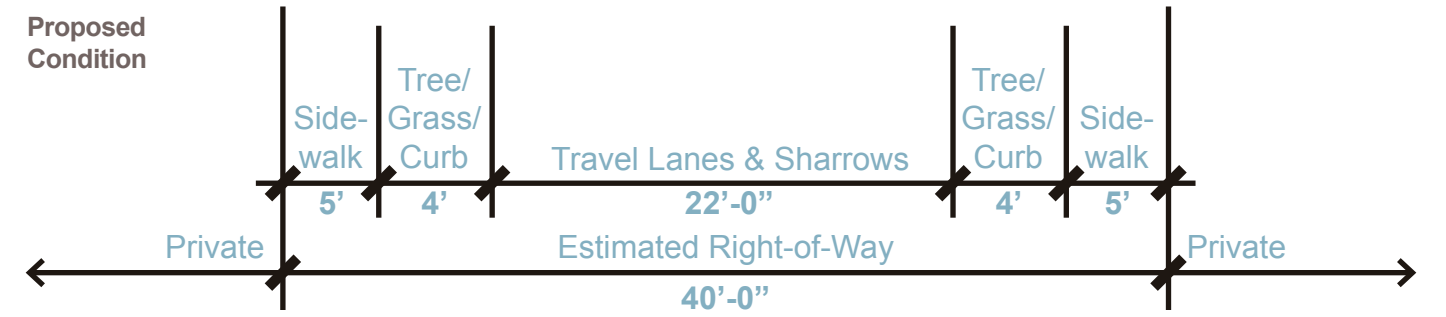
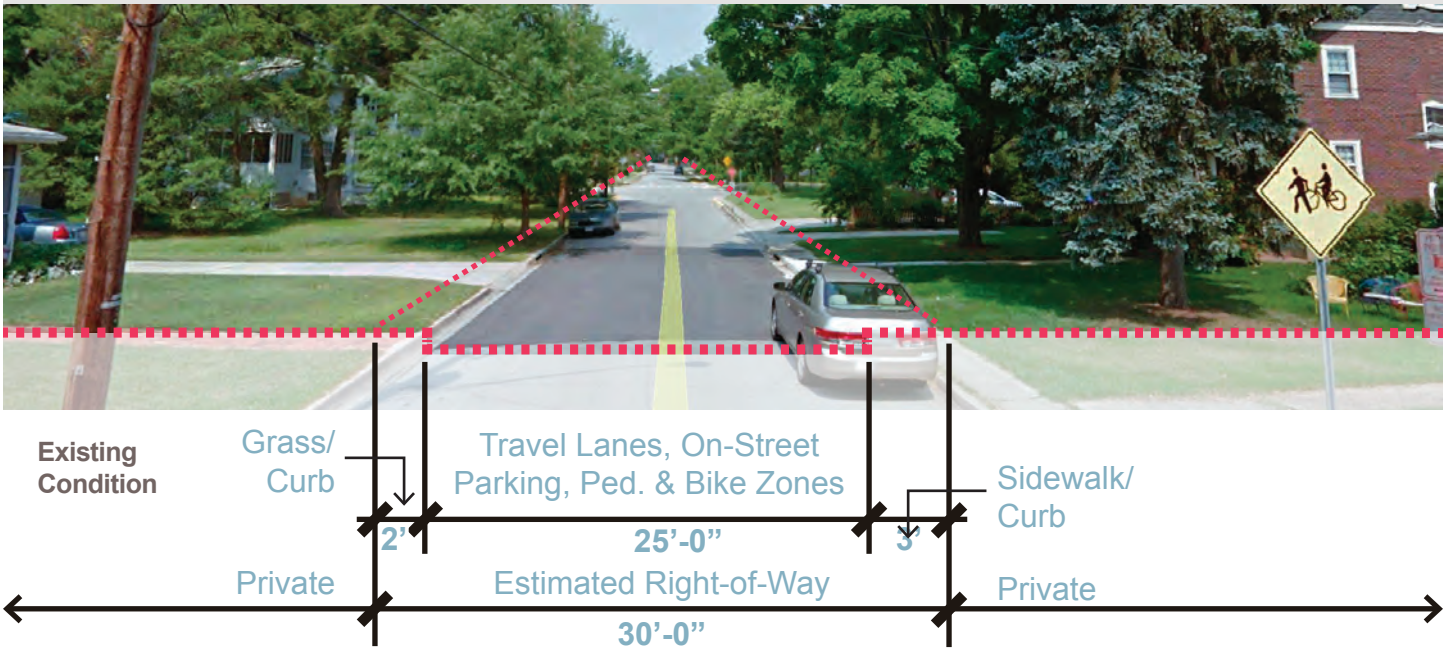
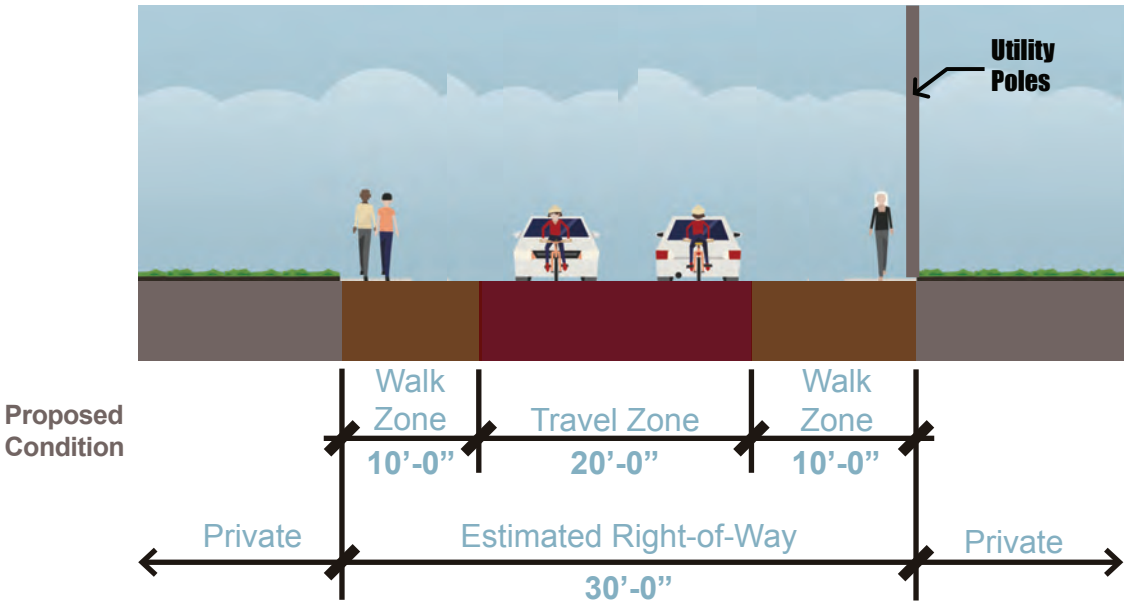


FIGURE 78 | GUILFORD ROAD: EXISTING AND PROPOSED CONDITIONS

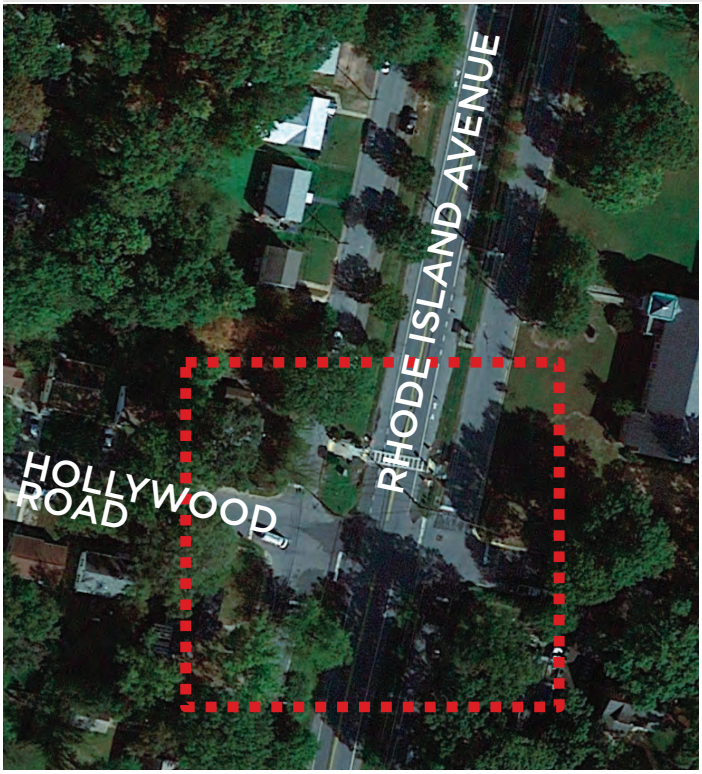




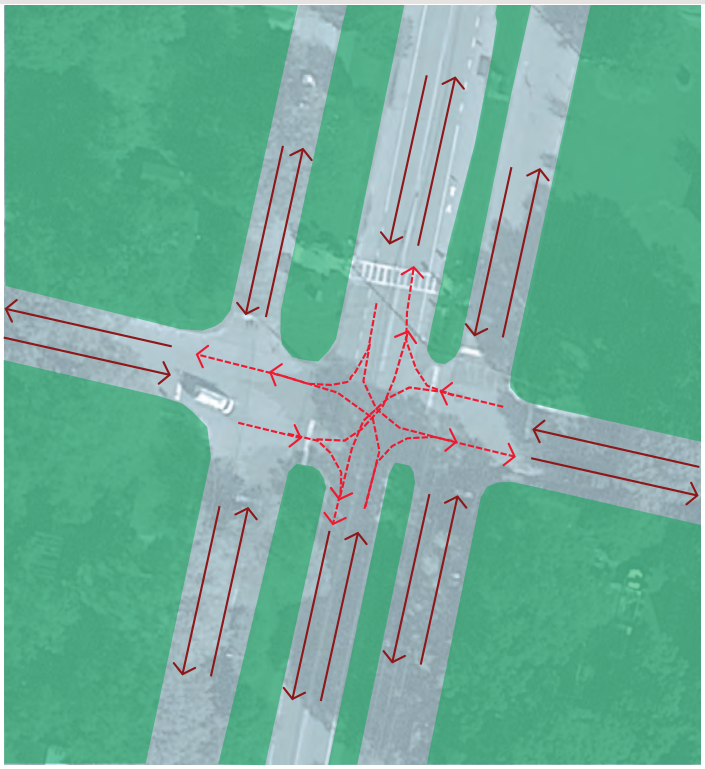
CONCEPTUAL DESIGN EXAMPLES

EXAMPLE INTERSECTION

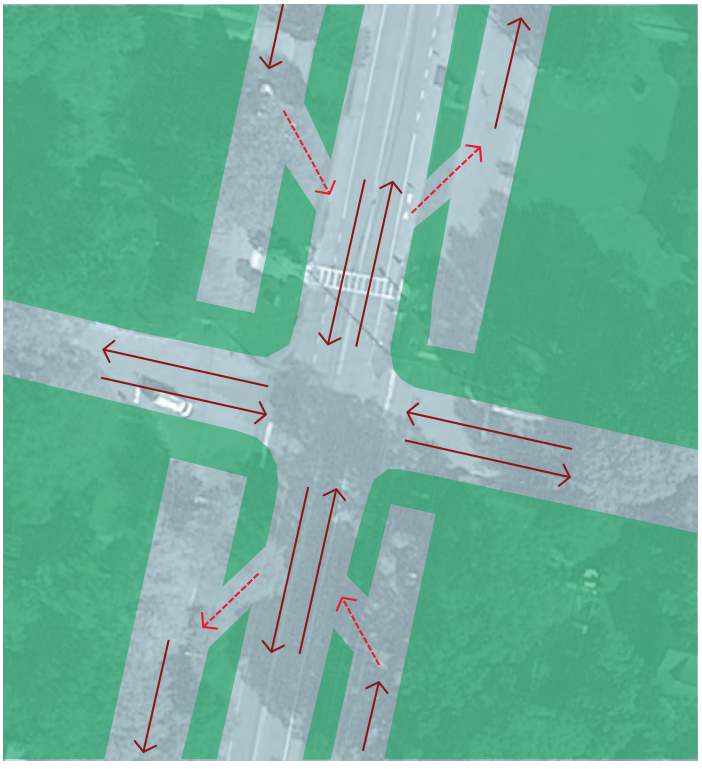
FIGURE 79 | EXAMPLE INTERSECTION



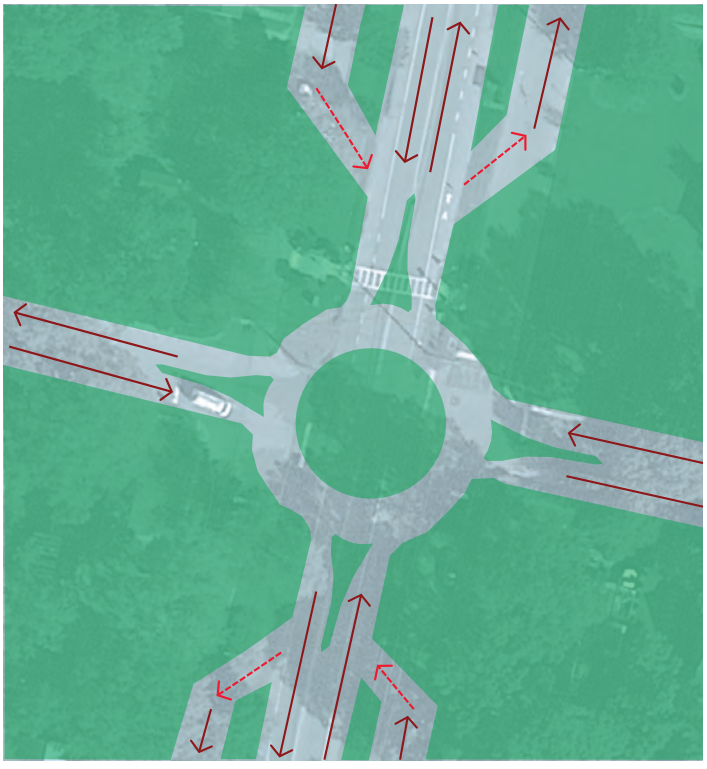
Aerial of Existing Intersection



Existing Movements at Intersection

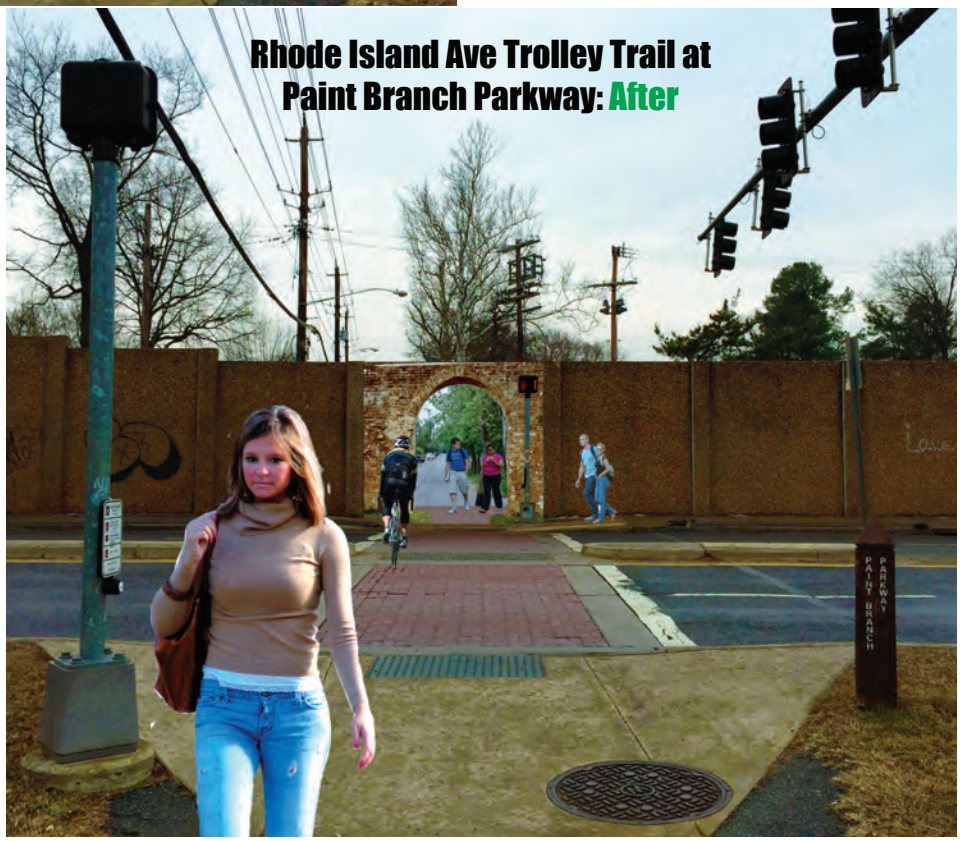


ALT #1: Boulevard with Slip Lanes for Local Access



ALT #2: Slip Lanes for Local Access and Roundabout

FIGURE 80 | TRAIL RECONNECTION



PRIORITIZATION + NEXT STEPS

06

PRIORITIZATION

PRIORITIZATION TOOL

In addition to understanding the available tools, and conceiving of projects to meet their complete streets goals, decisions-makers in College Park will have to gauge the value of their potential investments, and, when necessary, consider alternate solutions.

The Prioritization Matrix pictured below is a tool for making these determinations. It was also submitted as a spreadsheet, because it is intended to be interactive. The matrix can be used to analyze any street in College Park, not just those identified as examples in the headings of the columns.

The top three analysis rows of the matrix, in blue, are "prerequisites." Unless all three of these are set to "Yes," the other rows are grayed out. However, street's prioritization score is still visible, as it can help decide how hard to work to meet the prerequisites. The prioritization scores themselves are weighed against one another, with the darkest shade of purple indicating the highest prioritization scores.

This prioritization tool can be used in several ways; first, if a citywide or neighborhood scale complete streets plan recommends particular projects for particular street segments, each of those street segments can be entered into the tool according to its conditions after the proposed project is implemented. In this application, the tool can help City decision makers plan the order in which to make their investments, and identify where they may want to consider a different project to meet their goals.

Second, the tool can be used to assess different projects for a street segment in question, in order to weigh different options against one another.

Third, different segments of the same street may be having the same complete streets intervention suggested for them, but their surrounding land use and other contextual factors may be different. In this case, the prioritization tool can help decide which segment should be addressed first.

Prioritization matrix scores are a good tool, but cannot address some of the more nuanced contextual factors that influence decisions, and thus are always only a starting point for professional judgment and community discussion.

	Complete Street Prioritization Matrix	Berwyn Rd 40' - 55'	Lakeland Rd 50'-70'	Calvert Rd Varies, 40'	Guilford Rd 30'-60'	Hollywood Rd 40'	Knox Rd 40' - 55'	Lackawanna St 50'	Rhode Island Ave 100' - 146'
Prerequisites	Is funding available?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Is there a request from the Community or Community support?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Is ROW adequate for proposed modifications	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weighted priorities	Does the street connect major destinations? (Enter 0 for no, 1 for some, 2 for many)	0	1	2	1	0	2	1	1
	Does the street connect to existing or future trails? (No=0, Yes=1)	1	1	1	1	1	1	1	1
	Is the street highly visible? (No=0, Yes=1)	0	0	1	0	0	1	0	1
	Does the proposed project increase network connectivity for bicyclists and pedestrians? (No=0, Yes=1)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Is the corridor a transit route? (No=0, Yes=1)	0	0	0	0	0	0	0	1
	Is there high population density near the corridor? (No=0, Yes=1)	0	0	0	0	0	Unknown	0	0
	Are there documented safety problems? (No=0, High auto crashes=1, High bicycle or pedestrian crashes or a fatal crash=2)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	2
	Is there an opportunity to make changes to to corridor during coincident routine resurfacing? (No=0, Yes=1)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Is there new development planned within a 1/2 mile of the street corridor? (No=0, Yes=1)	Unknown	Unknown	1	1	1	1	1	1
	If assessing a new development: Does the proposed project increase network connectivity for automobiles? (No=0, Yes=1)	Unknown	0	0	0	0	0	0	Unknown
	If assessing multiple alternatives for the same street: Are the proposed treatments cost effective? (No=0, Yes=1)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	If assessing a project in a residential area: Does the proposed project include green infrastructure and/or traffic calming? (No=0, Yes=1)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Prioritization Score	1	2	5	3	2	5	3	7

TREATMENT ALTERNATIVES MATRIX

If the desired project for a given street segment scores particularly poorly on the prioritization matrix, is unappealing to the community, is important but too expensive, or cannot be accommodated within the available right of way, the Treatment Alternatives Matrix can help suggest another project that may meet the same goals. This matrix is organized according to five common complete streets goals. For each of these goals, the matrix provides options at different investment levels, and for different widths of available right of way.

The five goals:

- Accommodate Bicyclists
- Accommodate Pedestrians
- Slow Motor Vehicle Traffic
- Discourage Cut-Through Traffic
- Create Programmed Space/Reclaim Space for Non-Auto Uses

Goal	Unconstrained Right of Way Alternatives	Constrained Right of Way Alternatives
Accommodate Bicyclists	Two-way separated bike lane (cycletrack)	Shared lane markings (sharrows)
	One-way buffered bike lanes	Shared street design, with temporary treatments such as flexible curbs
	Standard painted bike lanes	Shared street design with permanent curbs
Accommodate Pedestrians	Complete the sidewalk network	Shared street design, with temporary treatments such as flexible curbs
		Shared street design with permanent curbs
Slow vehicle traffic	Speed humps (bicycle-friendly)	Speed humps (bicycle-friendly)
	Chicanes or pinch point, temporary/flexible curb	Chicanes or pinch point, temporary/flexible curb
	Chicanes or pinch point, permanent curb	Chicanes or pinch point, permanent curb
	Neighborhood traffic circle/miniroundabout	"Checkered" parking pattern
Discourage Cut-Through Traffic	Forced turns	Forced turns
	Chicanes or pinch point, temporary/flexible curb	Chicanes or pinch point, temporary/flexible curb
	Chicanes or pinch point, permanent curb	Chicanes or pinch point, permanent curb
	Full or partial diversion with curb/bollards	"Checkered" parking pattern
Create programmed space/reclaim some street space for non-auto uses	Parklets in parking spaces	Parklets in parking spaces
	Temporary café seating	Temporary café seating
	"Bike corrals" in parking stalls	"Bike corrals" in parking stalls
	Spray-chalk or other temporary paint to assign bike lane or other right of way reallocation	Spray-chalk or other temporary paint to assign bike lane or other right of way reallocation
	"festival street" design with permanent curbs	"festival street" design with permanent curbs

High Level of Investment

Medium Level of Investment

Low Level of Investment

Minimal Level of Investment

SAMPLE POLICY LANGUAGE

GUIDING PRINCIPLES

The Complete Streets Policy that is an outcome of this report should have the following qualities:

- Establishes high level vision
- Involves all users and modes
- Is part of all projects and phases
- Has clear exceptions
- Creates an integrated network
- Involves other jurisdictions
- Uses best practice design
- Is context-sensitive

The following policy language is intended to be a starting point for the eventual policy that College Park adopts. This language is adapted from existing complete streets policies that were listed among the best complete streets policies in the nation in a 2014 report by the National Complete Streets Coalition and Smart Growth America .

HIGH LEVEL VISION

The City intends and expects to realize long-term cost savings in improved public health, better environmental stewardship, reduced fuel consumption, and reduced demand for motor vehicle infrastructure through the implementation of this Complete Streets policy. Complete Streets also contribute to walkable neighborhoods, which can foster interaction, create a sense of community pride and improve quality of life."

Adapted from the Policy of Northfield, Minnesota

ALL USERS AND MODES

All users of the surface transportation network, including motorists, pedestrians, bicyclists, mass transit, children, senior citizens, individuals with disabilities, freight carriers, emergency responders, and adjacent land users, will experience a visually attractive and functional environment while traveling safely and conveniently on and across all surface roadways within the City.

Adapted from the Policy of Dayton, Ohio

APPLIED TO ALL PROJECTS AND PHASES

This policy is intended to cover all development and redevelopment in the public domain within the City. This includes all public transportation projects such as, but not limited to, new road construction, reconstruction, retrofits, upgrades, resurfacing and rehabilitation. Routine maintenance may be excluded from these requirements by the Director of Public Works on a case-by-case basis. This policy also covers privately built roads intended for public use

Adapted from the Policy of Clayton, Missouri

HAS CLEAR EXCEPTIONS

Exemptions to the Complete Streets policy must be documented in writing by either the Director of Public Works or City Engineer with supporting data that indicates the reason for the decision and are limited to the following: 1. Non-motorized users are prohibited on the roadway. 2. There is documentation that there is an absence of current and future need. 3. The cost of accommodations for a particular mode is excessively disproportionate to the need and potential benefit of a project. 4. The project involves ordinary maintenance activities designed to keep assets in acceptable condition, such as cleaning, sealing, spot repairs, patching and surface treatments, such as micro-surfacing.

Adapted from the Policy of Oak park, Illinois

CREATES AN INTEGRATED NETWORK

The City will design, operate and maintain a transportation network that provides a connected network of facilities accommodating all modes of travel... will actively look for opportunities to re-purpose rights-of-way to enhance connectivity for pedestrians, bicyclists and transit…will require new developments to provide interconnected street networks with small blocks.”.

Adapted from the Policy of Huntington Park, California

INVOLVES OTHER JURISDICTIONS

The City will work with other jurisdictions and transportation agencies within its planning area to incorporate a Complete Streets philosophy and encourage the Department of Transportation, the County and other municipalities to adopt or strengthen their own similar policies. Complete Streets principles will be applied on new City projects, privately funded development and incrementally through a series of smaller improvements and activities over time.”

Adapted from the Policy of Bozeman, Montana

USES BEST PRACTICE DESIGN

The City shall adapt, develop and adopt inter-departmental policies, urban design guidelines, zoning and performance standards and other guidelines based upon resources identifying best practices in urban design and street design, construction, operations and maintenance. These resources include, but are not limited to: the AASHTO Green Book; AASHTO Guide for the Planning, Designing and Operating Pedestrian Facilities; AASHTO Guide for the Development of Bicycle Facilities; ITE Designing Walkable Urban Thoroughfares: A Context Sensitive Approach; NACTO Urban Bikeway Design Guide; Manual on Uniform Traffic Control Devices; and US Access Board Public Right-of-Way Accessibility Guidelines. When fulfilling this Complete Streets policy the City will follow the design manuals, standards and guidelines above, as applicable, but should be not be precluded from considering innovative or nontraditional design options where a comparable level of safety for users is present or provided

Adapted from the Policy of Portland, Maine

SAMPLE POLICY LANGUAGE

IS CONTEXT SENSITIVE

Designs for particular projects will be context-sensitive, considering adjacent land uses and local needs and incorporating the most up-to-date, widely accepted design standards for the particular setting, traffic volume and speed and current and projected demand. Each project must be considered both separately and as part of a connected network to determine the level and type of treatment necessary for the street to be complete

Adapted from the Policy of the Miami Valley Regional Planning Commission, Ohio

INCLUDES CLEAR GOALS AND PERFORMANCE MEASURES

The City shall measure the success of this Complete Streets policy using, but not limited to, the following performance measures:

- Total miles of bike lanes
- Linear feet of new pedestrian accommodation
- Number of new curb ramps installed along city streets
- Crosswalk and intersection improvements
- Percentage of transit stops accessible via sidewalks and curb ramps
- Rate of crashes, injuries and fatalities by mode
- Rate of children walking or bicycling to school, unless otherwise noted above, within six months of ordinance adoption, the City shall create individual numeric benchmarks for each of the performance measures included, as a means of tracking and measuring the annual performance of the ordinance. Quarterly reports shall be posted on-line for each of the above measures."

Adapted from the Policy of Indianapolis, Indiana

HAS IMPLEMENTATION STEPS

In order to reach its complete streets goals, the City of College Park will enact the following steps.

- **Advisory Group.** The City will establish an inter-departmental advisory committee to oversee the implementation of this policy. The committee will include members of Public Works, Community Development, Recreation and Community Services and the Police Departments from the City. The committee may include representatives from the County's Department of Transportation, representatives from the bicycling, disabled, youth and elderly communities, the University, and other advocacy organizations, as relevant. This committee will meet quarterly and provide a written report to the City Council evaluating the City's progress and advise on implementation.

- **Inventory.** The City will maintain a comprehensive inventory of the pedestrian and bicycling facility infrastructure integrated with the City's database and will prioritize projects to eliminate gaps in the sidewalk and bicycle facility networks.

- **Capital Improvement Project Prioritization**. The City will reevaluate Capital Improvement Projects prioritization to encourage implementation of bicycle, pedestrian and transit improvements.

- **Revisions to Existing Plans and Policies.** The City of College Park will incorporate Complete Streets principles into: the City's Circulation Element, Transportation Strategic Plan, Transit Plan, Traffic Safety Master Plan, Specific Plans, Urban Design Element; and other plans, manuals, rules, regulations and programs.

- **Other Plans.** The City will prepare, implement and maintain a Bicycle Master Plan, a Pedestrian Master Plan, a Safe Routes to School Plan, an Americans with Disabilities Act Transition Plan and a Street Tree and Landscape Master Plan.

- **Storm Water Management.** The City will prepare and implement a plan to transition to sustainable storm water management techniques along our streets.

- **Staff Training.** The City will train pertinent City staff on the content of the Complete Streets principles and best practices for implementing the policy.

- **Coordination.** The City will utilize inter-department project coordination to promote the most responsible and efficient use of fiscal resources for activities that occur within the public right of way.

- **Street Manual.** The City will create and adopt a Complete Streets Design Manual to support implementation of this policy.

- **Funding.** The City will actively seek sources of appropriate funding to implement Complete Streets.

Adapted from the Policy of Baldwin Park, California

NEXT STEPS

FUTURE ACTIONS

As outlined in the policy language about implementation steps, a complete streets policy is the beginning of a process toward creating a network of complete streets, where people traveling by all modes are able to safely, comfortably, and conveniently access any destination in the City. The following set of recommended next steps outlines an initial framework for moving from policy to action.

- **Draft and Adopt the College Park Policy.** The sample policy language should be fine-tuned for the City's context and officially adopted by council.

- **Apply the Policy to Ongoing Projects.** Review current projects that make changes to the transportation network to evaluate if the projects can accommodate the values and priorities outlined in the policy. If there are points at which it is possible to intervene to bring the project into agreement with the policy, do so.

- **Master Plans for Each Mode.** Each transportation mode should have a network of safe and comfortable facilities for people in College Park to use to reach their destinations. While this is already achieved for automobile modes, each of the other modes will need a master plan or a master plan update to identify the projects that will connect pedestrians, bicyclists, and transit users to their destinations.

- **Complete Streets Plans for Each Neighborhood.** The mode master plans are crucial to providing network-scale context and allowing people to see the big picture in terms of increasing the safety and convenience for transportation in College Park. Ultimately though, most projects will happen in a local neighborhood-scale context. Neighborhood-scale complete streets vision plans and (eventually) implementation plans will allow each neighborhood to plan projects that fit their vision for their unique community, while also contributing to the City's ultimate complete streets goals, and the wider complete streets transportation network.

- **Plan for Future Development.** Throughout the City when redevelopment of existing properties occurs, the complete street policy should be required and made available to developers either prior to site plan development or as soon as contact with the City is made by the developer. This will guide decisions as to what contributions the developers of various properties will make towards achieving and maintaining the complete streets vision for College Park.

- **Incorporate Small Projects into Regular Maintenance Schedule.** The complete streets policy is applicable in both a broad vision and in detailed implementation. Smaller project, at the street or intersection level, can alleviate significant barriers to traveling both by foot or by bicycle. A mode specific and/or neighborhood master plan can distinctly identify these locations. For instance, if a small length of currently un-striped street provides a connection between two trails, then striping and designating a bike lane would be a low cost effort that creates high gain connectivity for the City-wide bicycle network. Similarly, adjusting existing maintenance policies to include snow removal and other regular maintenance action for sidewalks, bike lanes, and trails will allow the complete streets network to function year-round for all users.